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UNPERFORATED ULCERS OF TERMINAL ILEUM, SYMPTOMATICALLY SIMULATING APPENDICITIS *

J. SHELTON HORSLEY, M.D.

RICHMOND, VA.

As Hertzler has remarked, it seems strange that a viscus capable of such a wide range of locality as the appendix will, when inflamed, always have a point of greatest tenderness over the so-called McBurney's point, about midway between the right anterior superior spinous process of the ilium and the navel. He says the answer is that it does not. While the normally placed appendix gives pain at this point, the appendix abnormally situated shows maximum pain and tenderness elsewhere.

The symptoms of a typical uncomplicated case of acute appendicitis permit little diagnostic doubt. The rather sudden pain beginning in the epigastrium or around the navel, and the general abdominal discomfort with pain and muscle spasm eventually settling in the right iliac fossa, are almost pathognomonic of appendicitis. The sequence of the pain in the epigastrium or around the navel and later in the right iliac fossa is important. These symptoms are almost always accompanied by nausea and often by vomiting. A rise of one or more degrees in temperature is frequent, though not constant. At first, the pulse is usually not materially quickened. In early cases, the white cell blood count often cannot be considered of much diagnostic significance except in conjunction with the other symptoms. Not infrequently, mild appendicitis will give a high white cell count, while a gangrenous appendix, particularly in elderly patients, may show no marked change in the total white cell count and but little rise in the polymorphonuclears. In infants and young children, too, the blood count is not always suggestive of the disease. A rising white cell count, however, after pain and tenderness have developed, denotes progress of the inflammation.

Appendicitis may occur without these typical symptoms. In such instances it will usually be found that the appendix is not in what is considered its normal position. An inflamed appendix at the bottom of the pelvis gives symptoms referable to the median line, to the pubic region or to the left side. When the appendix is adherent to the bladder, there is often painful and frequent urination. An incompletely rotated cecum will cause the pain of appendicitis around the gallbladder. A retrocecal appendix, when inflamed, usually produces but little muscle spasm, with the pain near the anterior spine of the ilium, along the right iliac crest and in the back and the thigh. The thigh is often flexed, which may occur with the appendix in a normal position.

Pneumonia, especially in children, stone in the ureter or kidney, ptosis of the colon, sacro-iliac disease, spondylitis, a low perinephritic abscess, a pyogenic abscess in the psoas muscle as pointed out by LeRoy Long,[1] may produce symptoms difficult to distinguish from those of atypical appendicitis. Many of these diseases can be differentiated by careful observation and by the roentgen ray. The symptoms, however, which simulate very closely those of appendicitis, and which are due to a lesion in the adjacent intestinal tract, are more difficult to interpret.

The three cases here reported gave rather clear symptoms of appendicitis.

REPORT OF CASES

CASE 1.—Mrs. J. T. G., Jr., aged 36, white, who entered the hospital, Aug. 12, 1915, had had attacks of indigestion for fourteen years. When she was fatigued the pain would be worse, and she would have paroxysms of pain and gas formation. She always suffered from constipation. Between the attacks of indigestion there was no discomfort. Just before entering the hospital she had an attack of pain in the abdomen which was accompanied first by nausea and then by vomiting. In the previous attacks she had nausea but no vomiting. Her physician found spasm and tenderness in the lower part of the abdomen and made a diagnosis of appendicitis.

Operation, August 13, showed the appendix somewhat congested, and it was removed. On the ileum about 4 inches (10 cm.) from the ileocecal valve was a small congested and infiltrated area. This was thought to be an ulcer. The segment of ileum containing the lesion was removed. The stump of the ileum at the cecum was closed, and the upper end of the ileum sutured to the cecum by the end-to-side method.

The loop of resected ileum was about 5 inches (12.5 cm.) long, containing an irregular ulcer about one-half inch (1.25 cm.) by 1 inch (2.5 cm.) in diameter. There was no evidence of other ulceration (Figs. 1 and 2). Microscopic examination of the margin of the ulcer showed leukocytic infiltration with areas containing epithelioid cells of different sizes. In these areas there was some tendency to degeneration. It appeared to be a tuberculous ulcer.

The patient made an immediate satisfactory recovery. May 16, 1925, she reported that her health was not very good. She had occasional pain in the left lower part of the abdomen, which she says was the chief site of her discomfort before the operation.

CASE 2.—Mrs. R. E. B., aged 30, white, the mother of three children, entered the hospital, March 25, 1919. About two years before this, May 3, 1917, on account of placenta praevia, I had performed a cesarean section on her, from which she made an uneventful recovery. About a year and a half after

* From the Surgical Department of St. Elizabeth's Hospital.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Long, LeRoy: Acute Nontuberculous Ilio-Psoas Abscess, South. M. J. **18**: 198 (March) 1925.

the cesarean section the patient began to have discomfort and pain located chiefly in the right iliac fossa. In December, 1918, the attacks became sharper, coming on suddenly without regard to meals, sometimes in the day and sometimes at night. They were quite severe and would occur every week or two, compelling her to go to bed. The pain was made worse by exertion. She would be nauseated, but would not vomit. The patient entered the hospital with a diagnosis of appendicitis. There was pain and spasm in the right iliac fossa. The blood count showed 9,400 leukocytes and 69 per cent. neutrophils.

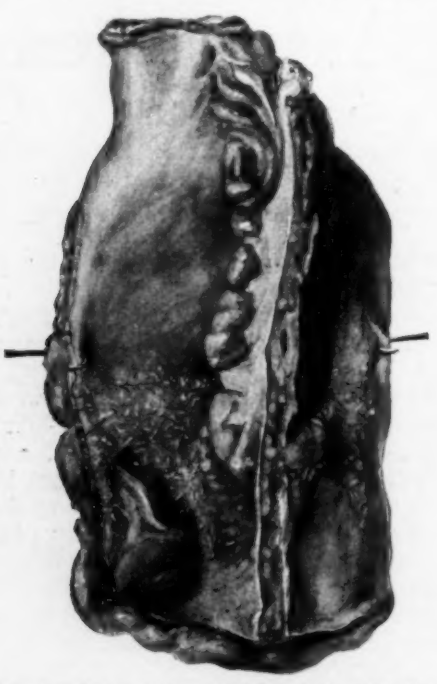

Fig. 1 (Case 1).—Segment of resected ileum, about 5 inches (12.5 cm.) in length: Near the lower end of the segment there is a congested and infiltrated area situated chiefly on the lateral aspect of the bowel; just below this is the upper end of the ileocecal fold.

March 27, 1919, she was operated on under ether anesthesia. On account of the previous cesarean section and the possibility of adhesions, the incision was made just to the right of the midline. There were a few adhesions of the intestine and of the omentum to the lower part of the abdominal scar. The appendix was rather large and was removed. Along the free border of the ileum, about an inch from the ileocecal valve, was a limited, thickened and infiltrated area. This seemed to indicate an ulcer. There was no evidence of ulceration elsewhere. The segment of the ileum containing the lesion was resected. As the ulcer was very close to the ileocecal valve, the valve was cut away and the ileum was implanted into the cecum at this point by the end-to-side method. An enterostomy was made in the cecum by introducing a small rubber catheter, which was brought out through a stab wound in the right iliac fossa. The right ovary, which was somewhat prolapsed, was sutured to the right cornu of the uterus.

The specimen consisted of the segment of the ileum and of the appendix. The appendix was 2 inches (5 cm.) long, considerably larger than normal, with no evidence of congestion or adhesions. On section, there was a slight thickening of the wall toward the tip; the mucosa appeared normal. The segment of the ileum was 5 inches (12.5 cm.) long, and externally near the lower end there was a thickened and infiltrated spot resembling the external appearance of a duodenal ulcer. The mucous membrane was normal except at the lower end. At this point there was a scar in the mucosa, showing partial healing of an ulcer, and adjoining the proximal side of the scar was an ulcer about a half inch (1.25 cm.) in diameter. The margins were sharp but not firm (Fig. 3). Microscopic examination showed leukocytic infiltration and areas of necrosis, epithelioid and giant cells typical of tuberculosis (Fig. 4).

The patient made a satisfactory operative recovery and was discharged from the hospital four weeks later. Since then her health has improved and she attends to her normal duties, though she still has occasional discomfort and some pain, particularly in the right leg and in the abdomen.

CASE 3.—G. B., a boy, aged 10, white, admitted to the hospital, Jan. 17, 1923, with a diagnosis of acute appendicitis, for several months had had short attacks of pain in the abdomen with nausea, described as "stomach aches." January 16, the day before admission, he was nauseated and vomited, and complained of pain over the entire abdomen, which was more marked in the right iliac fossa. On admission there was pain and tenderness with muscle spasm in the right iliac fossa. The urine was normal. The blood showed 9,000 leukocytes with 63 per cent. neutrophils.

About an hour after admission to the hospital, under nitrous oxid-ether anesthesia, the usual McBurney incision was made and a small amount of clear fluid was found free in the peritoneal cavity. The appendix was somewhat congested and was removed. The ileum was felt to be enlarged and the incision was extended in the direction of the muscle fibers so that the cecum and ileum could be delivered into the wound. The cecum was slightly congested, but otherwise appeared normal. The terminal ileum, however, was enlarged, thickened and hyperemic, and formed a somewhat spindle-shaped soft mass that gradually faded into the normal ileum above, and appeared to terminate somewhat abruptly at the ileocecal valve. There were many enlarged soft lymph nodes. It was thought that the condition was either tuberculosis or possibly sarcoma. The terminal ileum, cecum and part of the ascending colon were resected, and the ileum was united to the colon end-to-end. A half inch of the stump of the ileum was invaginated into the colon to simulate the ileocecal valve. An oblique enterostomy with a soft rubber catheter, following the principle of Coffey, was made in the ileum just above the site of the anastomosis. The tip of the catheter rested within the colon.

The specimen consisted of the appendix, and of the terminal ileum, cecum and a portion of the ascending colon. The appendix was 3½ inches (9 cm.) long, somewhat congested, and presented no evidence of adhesions. On section, the mucosa was slightly swollen and was congested, particularly in the distal third. There was no ulceration. The appendix appeared to have been secondarily involved by the hyperemia. The length of the specimen of ileum, cecum and colon was 12 inches (30 cm.). The cecum and colon were 3 inches (7.5 cm.) long, and the ileum 9 inches (22.5 cm.). The last 3 inches of the ileum were greatly hypertrophied and enlarged. Above, it gradually blended into what appeared to be normal ileum about 6 or 7 inches above the ileocecal valve (Fig. 5).

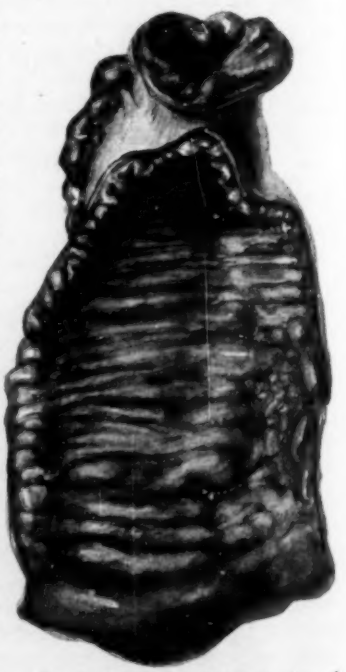

Fig. 2 (Case 1).—Internal view of segment of ileum shown in Figure 1. The contour of the ulcer is irregular; histologic examination of the margin showed the ulcer to be tuberculous.

In the mesentery were many enlarged lymph nodes, some of them an inch in diameter, which on section showed a few slightly yellowish areas not sharply marked. Most of the tissue of the lymph nodes was pinkish brown and seemed to be inflammatory hyperplasia. On section, the mucosa of the ileum showed numerous small yellow nodules that resembled

the tubercles of tuberculosis. They were about one-twelfth inch (0.2 cm.) in diameter. The mucosa was greatly thickened. The lesions in the ileum extended to the ileocecal valve, but stopped sharply at this point. In the last 3 inches of the mucosa of the ileum there were superficial ulcers with a yellowish base. They seemed to have a slight tendency to undermine. The mucosa of the cecum seemed normal (Fig. 6).

About 3 inches from the ileocecal valve, the swelling and thickening gradually diminished. The mucosa even in this region contained some of the small yellowish nodules resembling tubercles, but there were no ulcers. At the upper end of the specimen, the bowel seemed to be approximately normal. Microscopic examination of sections taken from different portions of the mucosa of the ileum and from the lymph nodes did not show evidence of tuberculosis.

The tubercle-like nodules were localized areas of what seemed to be lymphoid tissue and leukocytic infiltration which practically displaced the epithelial lining and the glands of the mucosa (Fig. 7). Around these nodules there was columnar epithelium, beneath which and between the crypts was leukocytic infiltration. Some of the surrounding columnar cells seemed to have degenerated. At no place was there evidence of either malignancy or tuberculosis. It appeared to be a subacute inflammatory condition possibly due to some type of pyogenic bacteria. The section of the lymph nodes showed marked hyperplasia but no evidence of malignancy or tuberculosis (Fig. 8).

Fig. 3 (Case 2).—Portion of interior of specimen: An ulcer is at the lower end of the specimen; there is a scar showing partial healing along the distal margin of the ulcer; on the oral side of this scar there is an ulcer, oval and about a half inch (1.25 cm.) in the longest diameter; the margins are sharp and somewhat punched out, but not firm.

The patient made an uneventful recovery and was discharged from the hospital, Feb. 7, 1923. His father reported, May 9, 1925, that his son was in good health, going to school, and appeared to be as normal as any boy.

COMMENT

In two of these cases there was a solitary tuberculous ulcer; at least there was no evidence of an ulcer elsewhere. In the third case, the gross appearance resembled tuberculosis very much, and it was not until repeated histologic examinations were made and some of the tissue was examined by Dr. A. C. Broders of the Mayo Clinic, who was also unable to find any histologic evidence of tuberculosis, that I was convinced that the disease was not tuberculosis. On account of the multiplicity of the bacteria in the ileum, it seemed that cultures would not throw any light on the subject.

The moral of the story of these cases is a warning that has been frequently repeated, but is often ignored: The surgeon who opens the abdomen for appendicitis should be prepared to deal with any condition that he may find. If the appendix is easily removable, the operation requires no great amount of skill; but if there is an ulcer of the duodenum, a diverticulum of the cecum, or some affection more serious than simple appendicitis, the life of the patient is in jeopardy unless the training of the surgeon enables him effectively to deal with these diseases. The obvious treatment for chronic ulcers of the terminal ileum is excision, and excision of an ileac ulcer usually means resection of the bowel.

The technic to be used in resection of the terminal ileum depends largely on the local conditions. As has been pointed out elsewhere,[2] the physiologic function and the contents of the lower ileum are quite different from the function and the contents of the upper

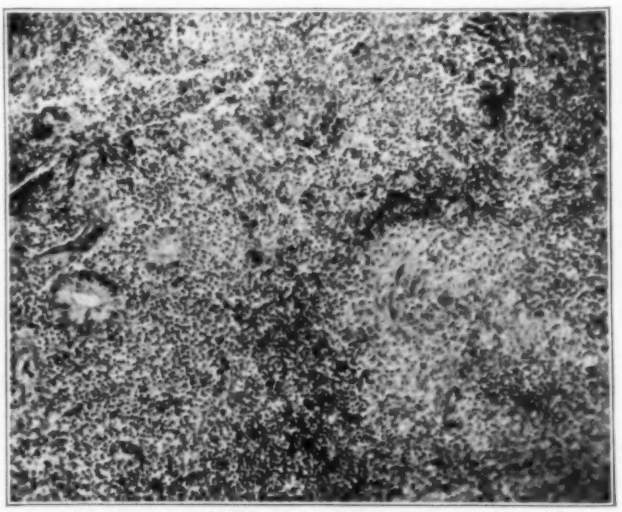

Fig. 4. (Case 2).—Section from margin of ulcer shown in Figure 3: On the left are two intestinal glands; on the right is an aggregation of atypical giant cells with epithelioid cells that seems to constitute a tubercle; in other regions of the field, particularly along the center, is extensive leukocytic infiltration. Deeper in the microscopic section, but not shown, are typical tubercles with large giant cells having numerous nuclei along the periphery. The region here photographed was selected, however, because it showed, in the same field normal intestinal glands and tuberculous tissue. Reduced from a photomicrograph with a magnification of 110 diameters.

jejunum. The sensitive and active peristalsis of the upper jejunum and the small amount of bacteria in this portion of the bowel demand different methods of procedure from those indicated in the rather slowly acting ileum with contents filled with bacteria of great virulence. Alvarez [3] has shown the marked difference in the behavior of the intestinal muscle in these two regions. Obstruction of the lower ileum, if not accompanied by gangrene, is withstood better than a similar obstruction of the upper jejunum. The work of Foster

Fig. 5 (Case 3).—Terminal ileum, cecum and ascending colon: The terminal ileum presented a diffuse, somewhat spindle-shaped enlargement; there were many greatly enlarged soft lymph nodes; toward the ileum, the lesion seems to fade off into normal tissue. Greatly reduced from the drawing.

and Hausler [4] has shown that, if an abundance of water is administered, an intestinal obstruction without marked interference with the circulation of the affected bowel may be borne much longer than is usually believed. In the upper jejunum, however, simple

2. Horsley, J. S.: Operative Surgery, Ed. 2, St. Louis, C. V. Mosby Company, 1924, pp. 669-674.
3. Alvarez, W. C.: The Mechanics of the Digestive Tract, New York, Paul B. Hoeber, 1922, p. 37.
4. Foster, W. C., and Hausler, R. W.: Studies on Acute Intestinal Obstruction, I, Different Types of Obstruction Produced Under Local Anesthesia, Arch. Int. Med. **34**: 97-107 (July 15) 1924.

obstruction [5] quickly gives rise to reverse peristalsis and vomiting, with rapid dehydration, a sudden rise in the nitrogen blood urea, and a drop in the blood chlorids.

These differences show that in resection of the lower ileum it is important to use a technic that will prevent contamination even though it gives a lumen of the bowel not so abundantly open as would be advisable in

Fig. 6 (Case 3).—Part of interior of specimen, an external view of which is in the preceding figure: The mucosa of the terminal portion of the ileum is shown; it is swollen, covered with many small tubercle-like nodules, and there are superficial ulcers; the lesion terminates sharply at the ileocecal valve; the mucosa of the cecum seems normal.

the upper jejunum. In the upper jejunum, with the importance of an unrestricted caliber and with but few bacteria present, the anastomosis is best made by an end-to-end method which by accurate suturing will produce a small diaphragm and close approximation of the bowel structures. While, of course, soiling of the surrounding tissue with bowel contents should always be avoided, it is not usually serious in this location. In the lower ileum and in the large bowel, however, the

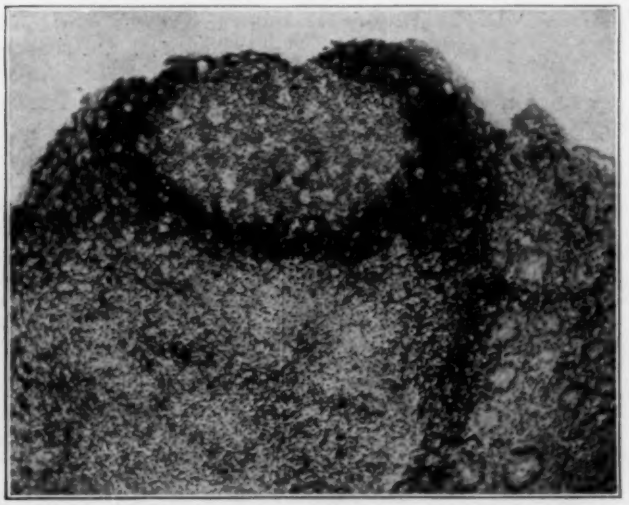

Fig. 7 (Case 3).—Section through one of the tubercle-like nodules: Lymphoid tissue and tissue with intense leukocytic infiltration seem to have displaced the normal epithelial structure of the mucosa; on the right is mucosa somewhat infiltrated, but containing normal glands; there is no evidence of tuberculosis. Reduced from a photomicrograph with a magnification of 110 diameters.

slightest soiling is a grave complication likely to be followed by severe infection. As the ileac muscular coat is not so sensitive as the muscle of the upper jejunum, a small amount of narrowing of the lumen by a wide diaphragm may be permitted.

The technic of Kerr is excellent in many of these cases of resection of the lower ileum. By this method, after dividing and tying the mesentery of the loop to be removed, each end of the loop is clamped with crushing forceps, applied close together, and divided with the electric cautery, which sterilizes that portion of the stump of the bowel within the grasp of the forceps. A basting stitch is placed, and the end of the bowel is automatically inverted by traction on the basting stitch as the clamp is removed. The two ends of the bowel are sutured together, and then the basting stitches are removed. The lumen is opened by invaginating the intestinal wall with a finger and a thumb on opposite sides of the anastomosis. The contents of the bowel cannot infect the surrounding tissue when this technic is properly carried out.

In resection of the lower ileum and the cecum, this technic is very satisfactory, particularly if the ileum is invaginated into the colon for from one-half to 1 inch

Fig. 8 (Case 3).—Enlarged lymph node from the mesenteric border of the terminal ileum shown in Figure 5: It has the structure of simple inflammatory hyperplasia without evidence of malignancy or tuberculosis. Reduced from a photomicrograph with a magnification of 110 diameters.

in order to simulate the ileocecal valve. This invagination can be done even when there is considerable fat in the mesentery, and adds to the safety of the operation in preventing leakage. When, however, there is much mesenteric fat and a loop of the ileum is to be resected and the ileum united end-to-end, the Kerr technic will not permit sufficiently accurate approximation along the mesenteric border even though the bowel be so rotated that the two mesenteric borders lie side-by-side instead of opposite each other. On one side at least, the sutures must go through the fat in the mesentery in order to catch the bowel wall, and the inclusion of the bulky fat in the grasp of the intestinal suture will probably cause breaking down of the fat and leakage, as I know by experience. In such cases it is safer to close the bowel end by a basting stitch after the Kerr technic, pucker up the basting stitch, tie the two ends together, and place an additional suture. Then, after stripping each stump of the bowel free from fecal contents, soft-bladed intestinal clamps are applied, and a lateral anastomosis is made. When the lumen of the bowel is opened in a lateral anastomosis there is a chance of contamination by fecal contents, but by properly protecting the surrounding tissues with moist gauze this chance

5. Haden, R. L., and Orr, T. G.: Use of Sodium Chlorid in Treatment of Intestinal Obstruction, J. A. M. A. **82**: 1515 (May 10) 1924.

should be reduced to a minimum. If contamination does occur, it will be on the smooth surface of the peritoneum, which is not so serious as in the fatty areolar tissue of the mesentery.

In order to remove all the diseased tissue along with the ulcer, an inch or more of apparently healthy bowel adjacent to the ulcer should be included in the resected segment. If the ulcer is near the ileocecal valve, the distal stump of the ileum will be too short to permit anastomosis. In such a case, the ileum may be excised flush with the cecum, and the upper end of the ileum implanted in this wound; or, what is probably better, the wound at the ileocecal valve may be sutured and the ileum implanted end-to-side in an incision made in the anterior surface of the cecum. By the latter method, the raw surface left by the mesocecum is avoided.

If there has been obstruction, and the bowel above the anastomosis is dilated, a catheter enterostomy following the principle of Coffey should be done. If, however, there is an unperforated ulcer with the symptoms of appendicitis and without obstruction, and the union of the ileum after resection has been satisfactorily accomplished, enterostomy will probably be unnecessary. Whenever the cecum is resected along with the ileum and an end-to-end union is made, invaginating the ileum into the stump of the colon, a catheter enterostomy in the ileum from 4 to 8 inches from the site of the resection should be done. This provides for the exit of gas and liquid feces, gives physiologic rest, and so promotes healing.

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ABSTRACT OF DISCUSSION

DR. ALBERT J. OCHSNER, Chicago: We have gotten into the way of looking at appendicitis as a minor operation. That is a great mistake. The appendix, when there is nothing wrong with it, can be taken out by any one, but when there is something the matter, as in the cases described by Dr. Horsley, it requires the very highest type of surgeon to take care of the case properly. Regarding the location of the pain, it has been my experience that when there has been an involvement of a portion of the peritoneum either behind the cecum or up under the gallbladder or down in the pelvis, the classical symptoms disappear and pain is located where the peritoneum not directly connected with the appendix has been involved. Singularly enough, in my community these cases that Dr. Horsley has described have become very rare for a number of years because all the milk that is used in Chicago has been pasteurized and we no longer get these tuberculous complications except in cases of pulmonary tuberculosis. We get no more cases from Wisconsin, for instance, because there the farmers are careful not to have cows with tuberculosis. In Illinois we are getting better. The farmers are beginning to take care, but we still occasionally get cases from Illinois and Michigan and some other surrounding states. The importance of tuberculosis of the ileum, which Dr. Horsley has spoken of, is very great, especially in the vicinities in which the farmers are not careful to eliminate tuberculosis from their herds and in places where the health departments do not insist on having the milk pasteurized. The other very important matter that Dr. Horsley has referred to is the matter of real surgery. In the three cases that he described, each one, in order to be treated properly, had to have a different method applied. Operation in all could have been performed in the same way, but the results would have been unsatisfactory. If this complication or other complications, such as gallstones or acute appendicitis, occurs with ulcer of the duodenum, and this has happened a number of times in my personal experience, the surgeon must be able to discover that complication and after he has discovered it he must be competent to take care of it.

PULMONARY TUBERCULOSIS

PROLONGED REST AND THE ABSORPTION OF DEPOSITS *

GERALD B. WEBB, M.D.
COLORADO SPRINGS, COLO.

Rest is specific for the cure of most active tuberculous lesions. It is granted that many patients with pulmonary tuberculosis have appeared to recover without rest. Credit is due surgeons for the first complete demonstration in joint tuberculosis of the principles of rest, and for their perception that prolonged rest was necessary for complete cure with the absorption of deposits and the reconstruction of damaged structures.

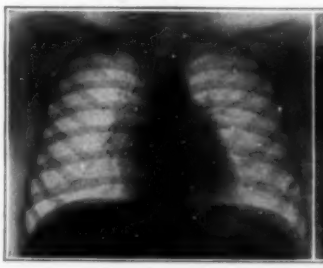

Fig. 1 (Case 1).—Appearance of chest in 1919: normal except for a small, partly calcified spot at the left hilum.

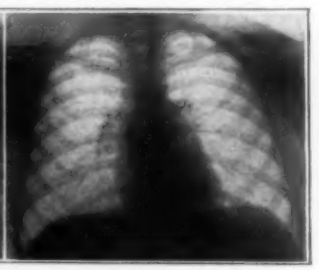

Fig. 2 (Case 1).—In 1922: small calcific spots in fourth interspace on right, and heavy deposits at right hilum.

Physicians, in prescribing for patients with pulmonary tuberculosis, have been slow to apply correct principles of rest to lungs which "move" more than a thousand times an hour. Pulmonary tuberculosis is liable to relapse in many instances because rest, prolonged and as complete as possible, is not continuous. In former publications I have called attention to the advantages of postural rest, and in the cases of bilateral apical disease, of the application of shot-bags. Artificial pneumothorax has once more taught physicians the need for prolonged rest in pulmonary tuberculosis.

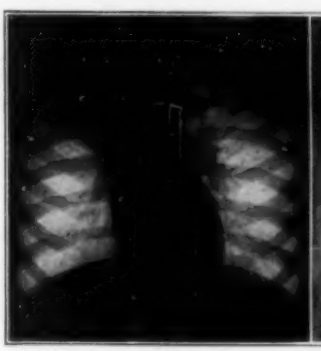

Fig. 3 (Case 2).—Appearance in 1915, when disease was detected.

Fig. 4 (Case 2).—Almost complete absorption of lesion in 1923.

Numerous patients in whom lung collapse was maintained for too short a time (less than three to five years) are now returning for thoracoplastic operations. Such operations emphasize again the value of prolonged rest.

The healing of first infection (childhood) in pulmonary tuberculosis is accompanied by calcification of the lesions.

* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

CASE 1.—G. R., a boy, aged 5, in whom there was no evidence of malnutrition, had a persistent slight fever. In 1919 (Fig. 1) the chest appeared normal, except for one small, partly calcified spot at the left hilum. Complete rest was given one year and partial rest two years. In 1922 (Fig. 2) there were small calcified spots in the fourth interspace on the right, and heavy calcific deposits at the right hilum. The boy was in excellent health.

Pulmonary tuberculosis in the adult is always accompanied by evidence of preceding calcified lesions (Opie). Until serial roentgen-ray studies were made, it was believed that pulmonary tuberculous deposits always became replaced by fibrous or calcified structures. We now know that in secondary lung infections of experimental animals, and also in phthisis, the actual absorption of lesions does occur. Amberson has summed up the matter thus: "The inflammatory or exudative type of tuberculous lesion may become completely removed by absorption. . . . The relative possibility or frequency of absorption of caseous residues requires further research."

The accompanying illustrations, accompanied by brief case histories, clearly show that massive exudative tuberculous lesions have been absorbed. Some of the illustrations suggest that caseous residues have been replaced by what appears to be healthy lung structure.

CASE 2.—A. C., aged 25, in whom the disease was active, had hemorrhage and tubercle bacilli were demonstrated in the sputum. The patient's mother died of pulmonary tuberculosis. There were bilateral apical medium râles. The first rest regimen was not thorough. Several relapses occurred. A more complete regimen was instituted. Figure 3 was taken in 1915, at the time the disease was detected; Figure 4, in 1923, showing almost complete absorption of the lesion. No râles were now present.

CASE 3.—P. G., aged 18, seen in June, 1919, complained of frequent headaches and excessive sweating of the palms. A brother had active pulmonary tuberculosis. The mother had chronic pulmonary tuberculosis. Figure 5, taken in 1919, appears normal but for slight bilateral calcific hilum deposits. In 1921, the patient developed high fever, and hemorrhage occurred. Tests revealed tubercle bacilli. There was a heavy bronchopneumonic shadow in the right middle and lower lobes (Fig. 6). The patient was given complete postural rest on the right side one year. There were râles over the lesion. Figure 7, taken in 1922, gives evidence of progressive absorption of the deposits. Partial postural rest and almost complete bed rest was given from 1922 to 1924. Figure 8, taken in 1924, reveals almost complete absorption of the lesions. The patient is in excellent health. Exercise is strictly limited.

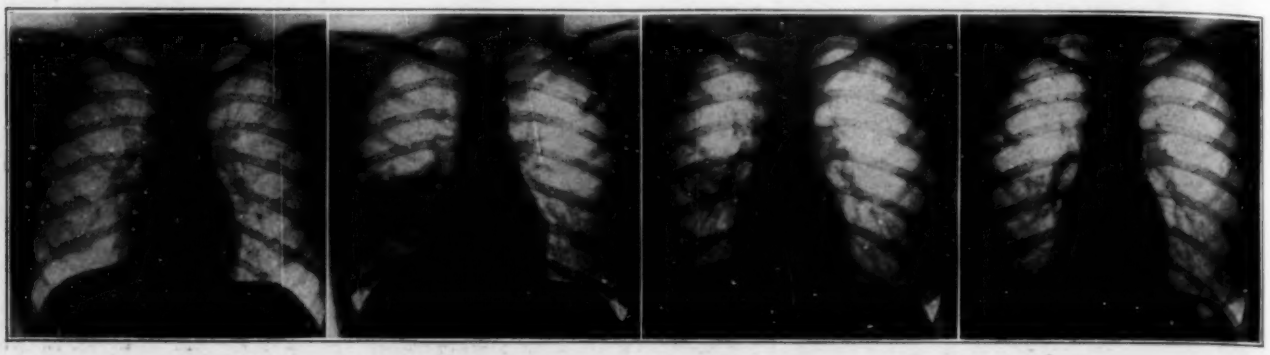

Fig. 5 (Case 3).—Appearance in 1919: normal except for slight bilateral calcific hilum deposits.

Fig. 6 (Case 3).—In 1921: presence of heavy bronchopneumonic shadow in right middle and lower lobes.

Fig. 7 (Case 3).—In 1922: evidence of progressive absorption of calcific deposits.

Fig. 8 (Case 3).—In 1924: almost complete absorption of the calcific deposits.

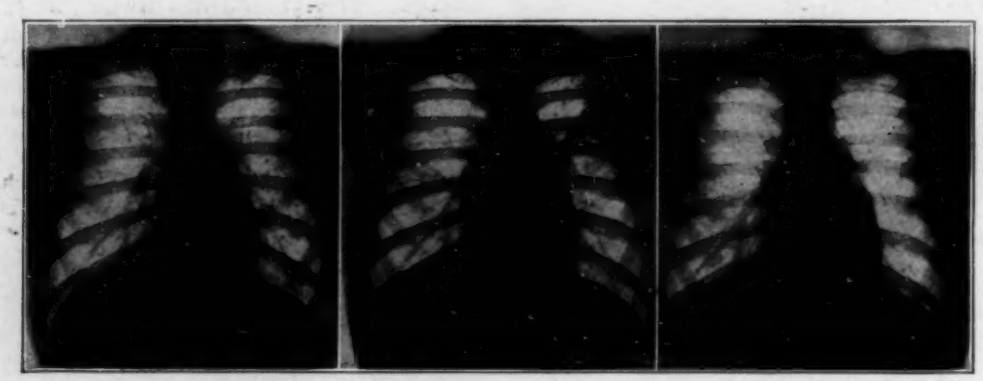

Fig. 9 (Case 4).—Appearance in 1921: lesion at left apex, with a small ring shadow.

Fig. 10 (Case 4).—In 1922: marked spread of the disease below the former area.

Fig. 11 (Case 4).—In 1924: clearance of all lesions after postural rest.

There has been no sputum and no fever for eighteen months. The pulse is still slightly accelerated. There are no râles.

CASE 4.—H. R., aged 26, seen in May, 1921, had fever, hemorrhage, and tubercle bacilli in the sputum. Medium and coarse râles were heard at the left apex. Figure 9, taken in 1921, showed a definite lesion at the left apex, with a small ring shadow. The patient was unwilling to follow a proper rest regimen. In 1922, there was marked spread of the disease below the former area (Fig. 10). In 1924, after eighteen months of postural rest, there was clearance of all lesions (Fig. 11). There was no sputum, and there had been no fever for one year; the pulse was still slightly accelerated. Râles were few and inconstant.

CASE 5.—A. I., aged 35, seen in June, 1922, had fever, tubercle bacilli in the sputum, and small hemorrhage. Râles were heard at the right apex. There was a small definite lesion at the right apex (Fig. 12). The patient returned to a clerical occupation after nine months in an Eastern resort. In 1923 there was massive spread of the disease (Fig. 13). Medium

and coarse râles were heard generally over the right side. In 1924, there was partial clearing of deposits (Fig. 14) after one year of postural rest. Now there is almost complete disappearance of the former massive deposit (Fig. 15). There has been no sputum and no fever for one year. The pulse is normal, and there are no râles.

In some cases with the absorption of lesions a complete disappearance of râles is noted. In other cases, râles remain or are inconstant, possibly owing to a bronchiolectasis.

The lesson to be learned from such cases is the lesson the surgeons have long since learned, that splints should not be taken off as soon as a sinus heals or a joint appears to be cured.

Rest in pulmonary tuberculosis should be prolonged many months after the temperature and pulse have become normal and sputum has disappeared. The tuberculous deposits shown in the illustrations have in general started to clear away after six months of rest, but have not been completely absorbed until from two to three years of rest.

ABSTRACT OF DISCUSSION

DR. F. M. POTTENGER, Monrovia, Calif.: Dr. Webb has emphasized three of the most important points in tuberculosis: (1) the curability of tuberculosis; (2) the fact that time is a very important factor, and (3) the importance of rest in aiding cure. In the minds of most people, including physicians, tuberculosis is still branded as a more or less hopeless disease. In the minds of men who are working intelligently with it, it is recognized, particularly if the disease can be treated early, that it is a very hopeful disease. Tuberculosis shows a marked tendency to heal in all stages. Time is essential. Tuberculosis is a chronic infection. Its healing requires months and years—not days and weeks. The time required varies according to the nature of the disease; the resistence shown by the patient, and the cooperation which he gives in treatment. In many instances in which there is a failure in results in six months, success could be attained in nine months or a year. In many instances in which there is a failure in results in a year, success could be attained in two years, three years or longer. Rest is one of the most important factors in treatment. The importance of rest is not sufficiently recognized, and a physician who would advise his patient not to take tuberculin or have his lung collapsed under any circumstances would in all probability suggest to him that he go out in the open and exercise. More patients kill themselves by exertion at the time when rest is indicated than by any other measure. The meaning of rest should be understood. It is not simply lying in bed, but it is a physical and mental relaxation. Lying in bed and visiting, or studying, or playing games cause an expenditure of a great deal more energy than lying in bed quietly, resting. Rest means keeping the patient at the point of utilizing the least possible of mental and physical energy. To illustrate the importance of physical rest, the heart of a person weighing 150 pounds (68 kg.), lying quietly in bed, does work in twenty-four hours equivalent to lifting a one ton weight 152 feet. Walking running, or engaging in strenuous exercise doubles or quadruples this during the time the exertion is taking place, all of which calls for a more hurried circulation, deeper and more rapid breathing, and consequently more exercise for the lung. It also produces a condition of suboxidation, which favors necrosis. Mental rest is just as important as physical. A patient can lie in bed and fret and worry and be discontented and unhappy and use up as much energy as though he were exercising. As regards the disappearance of lesions in the lung, we now know that marked lesions will disappear entirely. This is something that we did not know a few years ago. We expected to find extensive scars present under all conditions where an extensive tuberculosis had healed; but such is not the case.

DR. S. ADOLPHUS KNOPF, New York: I agree absolutely with Dr. Webb's conclusions. It may be of interest to hear of a method of local rest which can be given to the lung, in addition to general rest, by a controlled diaphragmatic respiration which consists in teaching the patient to breathe mainly with the diaphragm, this because the vast majority of tuberculous lesions are found in the upper lobe. Granting that the average tuberculous patient breathes at least twenty times a minute, by reducing the number to ten (and some patients can do better), and resorting to this type of respiration during five hours, not necessarily consecutively, the patient may reduce the number of his respirations by 3,000 during that time and save his lungs 6,000 excursions. The modus operandi is simple but must be explained to the patient. The latter should be placed in a semireclining position, at an angle of about 30 degrees, which requires least work for the heart. He should relax as much as possible and be told to imagine that the respiratory movement begins in the toes of his right foot, the inhalation gradually traveling upward as far as the diaphragm on the right side, then crossing over to the left, and gradually descending during exhalation to the left foot. While this breathing upward from the toes to the abdomen is merely imaginary it results in a diaphragmatic respiration and whatever quantity of air is inhaled passes mainly through the lower portions of the lungs while the upper portions are, if not at complete, at least at relative rest. The patient must, of course, concentrate his mind on this procedure. He should not be thinking of anything else during this rest breathing period. The surest way to teach the method correctly is to ask the patient, during inhalation and during exhalation as well, to follow the physician's hand with index finger pointing as it moves in the upward direction from the right toes over to the left side of the diaphragm, then downward to the left foot. When the finger has arrived

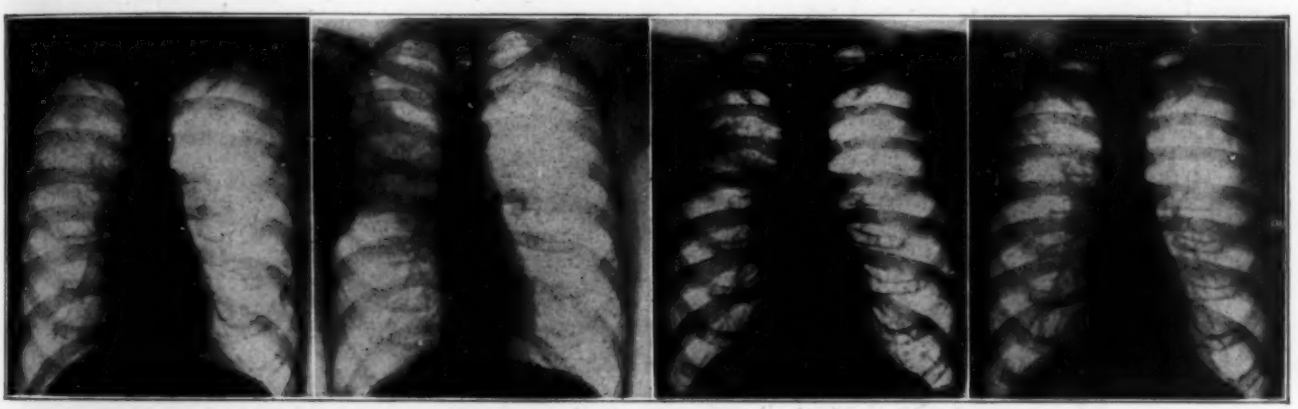

Fig. 12 (Case 5).—Appearance in 1922: small lesion at right apex.

Fig. 13 (Case 5).—In 1923: massive spread of the disease.

Fig. 14 (Case 5).—In 1924: partial clearing of deposits.

Fig. 15 (Case 5).—In 1925: almost complete disappearance.

at the left side of the diaphragm, the patient begins to exhale during the downward movement of the finger. The relation of the duration of the two acts should be as 5 to 4, 5 for inhalation and 4 for exhalation. At the end of exhalation, the patient may hold his breath a moment or two before beginning a new cycle. This holding of the breath reduces still more the number of respirations each minute. The psychologic element in this procedure is most important. To tell him that whenever unhappy thoughts come to him he should resort to controlled diaphragmatic respiration, realizing that with the saving of every respiratory movement he is adding to his general rest and so much more to his chances of his cure, will be a good help. He must concentrate his mind on this method and cannot think of anything else when doing it.

DR. HENRY SEWALL, Denver: Rest is a positive biologic attitude. In order to have absolute rest we must have the nurse at hand to give every mouthful of food or fluid, through a tube if necessary, and to scold the patient if he attempts to try any muscular exercise. It takes a spirit of unlimited doggedness, patience and faith on the part of both the physician and the patient to carry out such a course of treatment. But the fight is only beginning when the temperature becomes normal. The physician will need all his judgment, resourcefulness, and all the confidence of the patient in the period that follows. We know that supervision for from three to five years is often not too much. The Denver Sanatorium Association investigated the tuberculosis mortality in Colorado covering a period of thirteen years ending in 1920. Nearly 24,000 deaths were tabulated. This number represented a mortality from tuberculosis of about 249 per hundred thousand population in Colorado, almost the highest in the United States. But when these data were analyzed it was found that nearly 45 per cent. of the deaths were of immigrants who had sojourned less than one year within the state. And of the number dying within this period nearly 59 per cent. died within three months of their advent in Colorado. Two conclusions are obvious: 1. A large proportion of tuberculous invalids are kept at home until in a practically hopeless condition before seeking Colorado. 2. Either through necessity or lack of good judgment the invalids fail to get the advantages of rest, which in so stimulating a climate is of paramount importance until, at least, thorough acclimatization has been acquired. An investigation of tuberculosis mortality from disease acquired in Colorado-born subjects showed that such deaths represent only 30.8 per hundred thousand of the population.

DR. GERALD B. WEBB, Colorado Springs, Colo.: We must not be deceived by a drop in the patient's temperature. That is only the beginning of the fight. The patient should rest one year, or two, or sometimes even three years, but we must remember that "a mind unoccupied is a mind distressed." The patients must be happy while resting.

Colloidal State of Matter.—When we crush and grind the ordinary coarse matter which we can see and handle, we can break it up into smaller and smaller particles. At first these particles can still be seen by the unaided eye; but, as the process of grinding is continued, they become so small that they can be distinguished only with the help of a lens or of a microscope. One can carry the process of subdivision of matter still further, so that the particles become too small to be seen even with the aid of the most powerful microscope, and finally reaches the ultimate limit of subdivision, the molecule, beyond which farther subdivision is impossible without destroying the chemical nature of the substance. Since the smallest particle of matter directly visible under the microscope is perhaps about a thousand times larger than the simplest molecule, a considerable range of subdivision of matter lies between the limits of the microscopically visible and the molecular states; and it is to this intermediate zone that I have ventured to apply the term the "twilight zone of matter." It is to this range of subdivision of matter that, in more scientific language, the term "colloidal state" of matter is applied.—Findlay, Alexander: The Twilight Zone of Matter: *Science* **62**:192 (Aug. 28) 1925.

HEMATEMESIS

A PLEA FOR OBJECTIVE METHODS OF DIAGNOSIS *

CHEVALIER JACKSON, M.D., Sc.D.
GABRIEL TUCKER, M.D.; LOUIS H. CLERF, M.D.
ROBERT M. LUKENS, M.D.
AND
WILLIAM F. MOORE, M.D.
PHILADELPHIA

A series of 280 cases at the Bronchoscopic Clinic affords abundant illustrations of the well known errors incident to inferential diagnosis as to the source of blood issuing from the mouth, and illustrates how a positive diagnosis can be reached in practically all cases in which the blood comes from the food passages proximally to the pyloric antrum, with all the certainty afforded by direct inspection and, in suitable cases, by biopsy. Complete histories and the serologic and other tests in use by clinicians were made in all cases; but in this presentation everything that was negative or irrelevant will be omitted. Nine cases have been selected as illustrative of the most important points.

CASE 1.—*Hematemesis in a man, aged 50.* There was a history of gradual loss of weight and strength, slight difficulty in swallowing of six months' duration, melena and occasional vomiting of dark, blood-tinged food containing free hydrochloric acid. The patient was sent to us for esophagoscopy and gastroscopy because of the diagnostic question arising from the fact that an abdominal exploratory operation done in another city by a very skilful surgeon was entirely negative. The surgeon's assistant had passed a stomach tube, which encountered obstruction low in the esophagus and had come back bloody. The patient had been told that he had cancer.

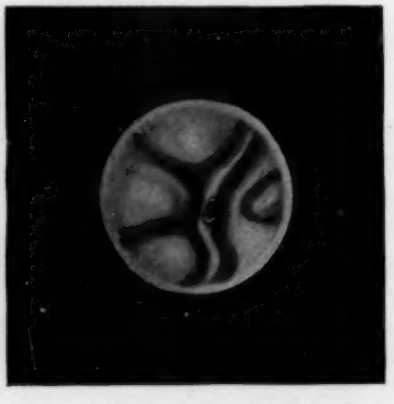

Fig. 1 (Case 1).—Esophagoscopic appearances of varicosities in the esophagus of a man, aged 50: The erosion in the vertical varicosity near the center of the sketch was the source of blood in this case of hematemesis.

A roentgen-ray examination by Dr. Manges revealed a slight narrowing of the esophagus in the lower third, at which point he diagnosticated a lesion that he felt could be the source of the hematemesis, but he stated that it had none of the radial characteristics of a malignant process. He also stated that there was no evidence of any lesion in the stomach. We did a diagnostic esophagoscopy without any anesthetic, general or local, for diagnosis. The patient had been given no food for twelve hours. On introduction of the esophagoscope, a considerable quantity of dark fluid with "coffee ground" flocculi welled up into the tube mouth, but quickly disappeared through the drainage canal of the esophagoscope under the suction of the mechanical aspirator. The esophageal mucosa was found normal until the diaphragmatic level was approached. Here we encountered the usual rounded folds, but a number of them were larger and darker than normal. A quantity of bright red blood was encountered at this point. After aspirating and mopping away the blood, we found the source of hemorrhage in one of the very dark folds.

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* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

The duration of the esophagoscopy was three minutes, forty-one seconds. The esophagoscopic diagnosis was "bleeding varicosity of the hiatal esophagus." In the treatment of this case the patient was placed on a liquid, nonirritating diet by the family physician, who also carried out a course of salines with diuretic and other suitable adjuncts to deplete the portal circulation. This was probably the most efficient part of the treatment, but the patient was also given bismuth subnitrate dry on the tongue at frequent intervals, for the local hemostatic and healing effect on the erosion of the venous wall. The hemorrhages ceased in a few weeks. The patient regained his normal weight, lost his cachectic look, and recovered good health. Esophagoscopy later showed the large folds corresponding to varicosities still present, whether less prominent than formerly it is impossible to say; but the esophagoscope passed into the stomach readily and showed no bleeding point and no blood.

In this case a deductive diagnosis of cancer was supported by the history, the age of the patient, obstruction to the stomach tube, which came back bloody, the analysis of the vomitus, and the beginning cachexia. Only the roentgen-ray examination of Dr. Manges and the exploratory operation done before admission had been negative for cancer. The vomited blood came from the stomach, but it had leaked into the stomach from an eroded varicosity in the esophagus. We think it none too strong a statement to say that absolutely the only means today known to medicine and surgery for making a positive and absolutely certain diagnosis in such a case is by direct inspection of the bleeding point with the esophagoscope. This was done by one of us, without anesthesia, general or local, without hospitalization, and with no more discomfort than having a carious tooth filled, in three minutes and forty-one seconds.

CASE 2.—*Hematemesis in a man, aged 42.* We were asked to examine this patient esophagoscopically by Dr. S. Solis-Cohen, who had made an inferential diagnosis of esophageal varix secondary to a beginning cirrhosis of the liver, though the hepatic symptoms were exceedingly slight; so slight, in fact, that they had been overlooked by several clinicians who had studied the case prior to Dr. Solis-Cohen. Esophagoscopy without anesthesia, general or local, showed the varicosities. The bleedings ceased temporarily, at least, after the use of bismuth subnitrate in small doses dry on the tongue at frequent intervals, and of appropriate treatment for the hepatic trouble. The patient disappeared from observation, but doubtless the hemorrhages recurred; doubtless also the cirrhosis progressed, and ere this has proved fatal.

CASE 3.—*Hematemesis in a woman, aged 46.* This patient was sent to the Bronchoscopic Clinic for diagnostic esophagoscopy by Dr. John B. Deaver, who doubted the diagnosis of cancer made by his predecessors in the case, one of whom had done an exploratory operation. A practitioner three years previously had made a diagnosis of ulcer of the stomach, notwithstanding a negative roentgen-ray examination. The exploratory operation having resulted negatively, the practitioner had made a diagnosis of cancer of the esophagus, based on hematemesis and the fact that a bougie was arrested at 16 cm. from the upper teeth and came back blood stained. The patient was certain that the blood spontaneously produced from time to time was vomited, not coughed up. It was sometimes dark. A rather scanty specimen of vomitus brought in was partly dark, partly bright red, and slightly acid in reaction. The weight loss had been only a few pounds. The stools showed no gross evidences of blood loss. The only symptom other than the spitting up of blood was an intermittent feeling of "burning, rawness and pain," back of the sternum and extending through to the back. This was usually excited by taking food, and it subsided more or less between meals. Roentgen-ray study by Henry K. Pancoast had showed no evidence of gastric or duodenal abnormality and no stenosis or evidence of cancer of the esophagus. From this negative finding and the location of the pain and the symptoms, Dr. Pancoast suggested the tentative diagnosis of esophagitis. He also advised esophagoscopy. On passing the esophagoscope without anesthesia, general or local, we found intense, chronic esophagitis, with superficial, bleeding erosions of the esophageal mucosa above the diaphragm. The abdominal esophagus and the gastric mucosa were seen endoscopically to be normal. Nowhere between the mouth and the pyloric antrum was there any cancerous lesion of the mucosa. The diagnosis, therefore, was "chronic esophagitis with bleeding erosions." The treatment consisted of physical rest, bland liquid diet, and dry bismuth subnitrate by mouth, under the supervision of the family physician, who reported complete recovery in about two months.

Comment on this case is unnecessary, further than to say that this patient and her relatives were needlessly tortured for two years by the mistaken diagnosis of cancer of the esophagus. At any time during those two years the absence of cancer could have been demonstrated, mental anguish terminated, and the hematemesis cured, if the diagnostic esophagoscopy, requiring less than four minutes and no anesthesia or hospitalization for its performance, had been done as a part of the preliminary examination.

CASE 4.—*Hematemesis in a child, aged 2 years.* According to the mother, a very intelligent woman, this baby had been "vomiting blood and food" for six months. The stools had been tarry in character at times. There had been occasionally slight temperature elevation. There was a loose, croupy cough, occasional during the day, but in severe paroxysms at night. The family physician had sent the child to a large clinic, where a diagnosis of splenic anemia was made. Under treatment improvement was noted, and the child returned home. All the symptoms recurred after a bronchopneumonia, and the child was sent to another medical center, where a diagnosis of postnasal hemorrhage was made because of blood found in the fauces in the morning, and adenoids and diseased tonsils were removed. Again temporary improvement followed; but pulmonary symptoms increased, and the blood, though very small in quantity, was red, frothy and not acid in reaction. A diagnosis of tuberculosis was then made, notwithstanding the age of the patient. It was thought that the child was developing a tuberculous joint also. Then the child was sent to Dr. Edward E. Graham, who thought that foreign body should be excluded. He had a roentgen-ray examination made by Dr. Willis F. Manges, who found a safety-pin in the esophagus. Both Dr. Graham and Dr. Manges found conclusive evidences of chronic infective, nontuberculous pulmonary disease. The removal of the pin through the mouth with the esophagoscope and the Tucker forceps, without anesthesia, general or local, was not a difficult matter, notwithstanding the long sojourn and the corroded condition of the pin, and the pathologic changes in the esophagus. The esophagus at the site of lodgment was found obstructed by bleeding granulations and swollen folds. Six months after removal of the pin, the child was reported to be in perfect health.

The interesting points are these: 1. Hematemesis and tarry stools occurred from a foreign body in the esophagus. These symptoms call for exclusion not only of foreign body, but also of disease of the esophagus. Absence of these symptoms does not negative foreign body. 2. There was secondary anemia from esophageal hemorrhage due to foreign body. Puncture by the point of the pin may have been the mechanism of hemorrhage early; later the blood doubtless came from the ulcerative, exuberantly granulating area. 3. There were pulmonary symptoms amounting at times to a bronchopneumonia from a foreign body located not in the lungs, but in the esophagus. This very common and constantly overlooked cause of pulmonary symptoms and of pulmonary disease arises from overflow of food and secretions into the larynx and lower air-passages,

because the free and normal flow through the esophagus is interfered with by partial obstruction. 4. Much of the so-called vomiting in this and many similar cases we have seen was not vomiting, but regurgitation. In this case, however, there were a few times when dark flocculi in the vomitus indicated that some of the blood had been in the stomach. 5. The red, frothy, alkaline blood and the strong objective evidence of undoubtedly present pulmonary trouble pointed erroneously to the lungs as the source of blood. 6. Overlooked foreign body cases, of which we have had hundreds come to the Bronchoscopic Clinic, occur not so often from inability to exclude the foreign body, as from the fact that such a possibility is never even thought of.

CASE 5.—*Hematemesis from ulcerative syphilitic lesion of the esophagus.* A man, aged 52, was profoundly depressed because of the diagnosis of cancer of the stomach made in three large clinics in as many cities. At the last clinic an exploratory abdominal operation had been negative, and the patient had been told that the cancer was too high in the esophagus to be reached from below. He looked cachectic. For six months he had had progressive weight loss, dysphagia for solid foods, vomiting of blood, and tarry stools. Blind bouginage by one of his previous physicians had improved the swallowing for a time but had not lessened the blood loss. A roentgen-ray examination by Dr. George C. Johnston showed an organic esophageal stenosis of the lower part of the thoracic esophagus. At esophagoscopy, we found in the lower third of the thoracic esophagus a firm, rounded swelling bulging in from the right wall and obliterating the esophageal lumen except for a slitlike depression filled with bright red blood, which reappeared as fast as the aspirator of the esophagoscope took it away. Suddenly, with a retching, there emerged from the slit a large quantity of brownish fluid, containing blackish flocculi and having an odor of stomach contents. After this was taken away by the aspirator and the field cleared, an ulcerated surface was seen on edge occupying the lower part of the nodular mass, down in the slit. The surface of the ulcer was covered with a yellowish exudate and was surrounded, so far as exposed, by a zone of intense redness. An esophagoscopic diagnosis of hemorrhagic ulcerative esophagitis was made. It was deemed best to await the report on the Wassermann test before taking a specimen for biopsy. Dr. Ernest W. Willetts reported this test as positive plus four. Antisyphilitic treatment by Dr. L. W. Swope stopped the hemorrhages. Subsequent esophagoscopy showed the nodular mass to have disappeared. A cicatricial stenosis occupied the place of the ulcer, and included about three fourths of the lumen. Normal swallowing was restored by esophagoscopic dilation.

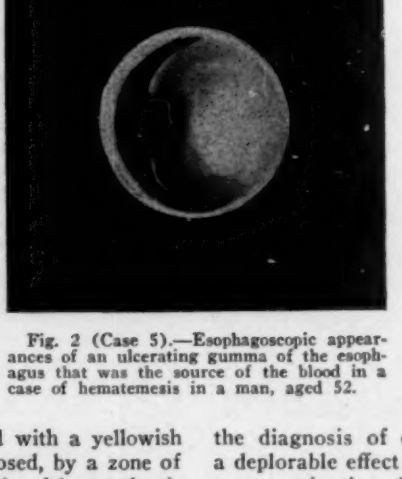

Fig. 2 (Case 5).—Esophagoscopic appearances of an ulcerating gumma of the esophagus that was the source of the blood in a case of hematemesis in a man, aged 52.

While gumma of the esophagus is a relatively rare condition, the close simulation of cancer of the stomach with esophageal extension, in this case, would render it advisable to exclude esophageal syphilis in all cases of vomiting of "coffee ground" character. The accuracy with which the source of blood was located esophagoscopically conveys an obvious lesson.

CASE 6.—*Hematemesis in a woman, aged 38.* This patient was referred for esophagoscopy to the Bronchoscopic Clinic by Dr. Henry K. Mohler of Dr. Thomas McCrae's service, with a tentative diagnosis of cancer of the stomach. The patient had great difficulty in swallowing. The food came back frequently, and sometimes it was mixed with bright red blood. Only once had dark particles been noticed, and the patient thought that they were particles of food. Gastroscopy showed no stenosis of the esophagus. Passing on into the stomach, a bleeding, ulcerated lesion was found on the lesser curvature, and a gastroscopic diagnosis of cancer of the stomach was made. A specimen of tissue removed through the gastroscope was reported by Dr. W. M. L. Coplin to be adenocarcinoma. The treatment of cancer of the stomach is, of course, surgical. The patient was referred to the surgical department, where the lesion was found at operation by Dr. Duncan L. Despard, to be small, and the prognosis was deemed the most favorable possible in a malignant lesion in this location.

The interesting points in this case are: 1. While the gastroscope was useful in confirming the diagnosis of gastric malignancy, the important point germane to this paper is the usefulness of the esophagogastroscope in locating the exact source of blood in hematemesis. 2. The occurrence of dysphagia with a patulous esophagus is not infrequent in cancer in the neighborhood of the cardia. The diaphragmatic pinchcock is concerned in this. 3. The occurrence of bright red blood in regurgitated foods does not necessarily mean esophageal disease. This esophagus was normal. 4. Only by the esophagoscope is it possible to exclude a lesion of the esophagus.

CASE 7.—*Hematemesis from peptic ulcer of the esophagus.* A woman, aged 48, compained of "water brash" and pain high in the epigastrium extending through to the back. The pain usually appeared an hour or two after eating. The most severe attacks occurred in the evening within three hours after eating. The pain was always relieved by taking sodium bicarbonate. Nausea before breakfast, and occasionally at other times, was followed by vomiting dark fluid containing particles of dark material. A diagnosis of vicarious menstrual hemorrhage from the gastric mucosa had been made early in the case. Bleeding gums had been treated locally. Nocturnal epistaxis was one diagnosis, unsupported by clinical evidence. Later the diagnosis of cancer of the esophagus was made, with a deplorable effect on the morale of the patient. A roentgen-ray examination showed no esophageal obstruction. Esophagoscopy located the bleeding point in a flat ulcer about 1 by 2 cm. in area, in the lower third of the esophagus. There was a zone of hyperemia around the ulcer, the edges of which were not raised or undercut. Silver nitrate was applied locally with the esophagoscope every alternate day. The diet was adjusted to the personal equation of the patient by Dr. K. I. Sanes. Only liquids and smooth semisolids were allowed. The ulcer soon ceased to bleed, and under the silver nitrate local applications was noted esophagoscopically to heal in from the edges. Cicatrization was complete in three months, and the patient was still well at the end of three years.

Water brash is a not infrequent symptom in peptic ulcer of the esophagus. The epigastric pain extending through to the back is characteristic and is usually much more complained of than in cases of cancer. The esophagoscope, however, is the only means by which the differential diagnosis can be made; and is the only means by which the source of the vomited blood can be determined. Even the roentgen ray, which is a diagnostic method of the first importance in all other diseases of the esophagus, is usually negative in cases

of peptic ulcer, because these lesions, unlike gastric ulcer, are not usually excavated in form.

CASE 8.—*Hematemesis in a man, aged 38.* A stoker, on his voyage home, was relieved from duty and put in the sick bay because of increasing dyspnea and feebleness, accompanied by cough, expectoration of blood, wheezing and hoarseness, which had led to a diagnosis of pulmonary tuberculosis. At times prolonged paroxysms of cough resulted in vomiting, the vomitus containing brownish clear liquid and brownish clots of blood. This had led to a diagnosis of cancer of the stomach at one hospital and to the diagnosis of cancer of the esophagus at another. Our colleagues in the medical department had questioned all these diagnoses. Dr. E. J. G. Beardsley had excluded active tuberculosis, and had found nothing to support a diagnosis of cancer or ulcer of the stomach. The patient was then referred to the Bronchoscopic Clinic for search for a bleeding point in the air or food passages. Esophagoscopy showed no lesion and no blood in the esophagus. Gastroscopy showed the gastric mucosa to be normal and the secretions to be clear and watery, as is usual in the normal empty stomach at gastroscopy. No blood or lesion was visible through the gastroscope, and the secretions automatically aspirated through the auxiliary canal of the gastroscope showed no admixture of blood, old or fresh. Bronchoscopy corroborated a previously made mirror diagnosis of a right recurrent laryngeal paralysis in the cadaveric stage. The trachea about 4 cm. below the glottis was found to be reduced to a narrow crescentic lumen by a pulsating mass which projected in from the right side.

The pulsations were expansile in character. The surface of the mass was granular, red, superficially eroded, and oozing bright red blood in very small quantity. The tracheal rings were visible on the left wall of the trachea, but the ringed appearance vanished as the rings merged into the edges of the mass. The bronchoscopic diagnosis was aneurysm encroaching on the right tracheal wall. A roentgen-ray examination showed the aorta slightly dilated, but not aneurysmal. Careful search with the fluoroscope revealed a small aneurysm of either the innominate or subclavian artery. Because of the shadows of the bony structures it was impossible to be certain as to which vessel was involved, and it was possible that both might contribute to the shadow.

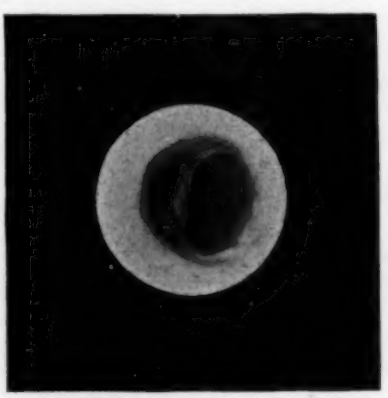

Fig. 3 (Case 7).—Peptic ulcer in the esophagus of a woman, aged 38. Following the blood stream to its source with the esophagoscope revealed this lesion as the source of the hematemesis and ended a year of needless mental anguish caused by an erroneous inferential diagnosis of cancer. Other erroneous diagnoses in this case were "bleeding gums," "vicarious menstruation" and "epistaxis."

Obviously, the vomited brownish blood, of which there was a history, had been coughed up and swallowed probably during sleep. The wheezing was due to partial occlusion of the trachea; the dyspnea partly to this and partly to the diminished glottic area from the recurrent paralysis. The cough was due to the aneurysmal irritation of the nerve trunks, the hematemesis and the hemoptysis to the oozing from the eroding aneurysm. But the most important point of all is this: While it cannot be claimed that a negative endoscopy in a search for a source of hematemesis or hemoptysis is always of more value than any other negative finding, yet when it is positive, as it often is, we have an absolutely conclusive objective finding that is as near final as anything human can be.

CASE 9.—*Hematemesis in a man, aged 28.* This patient was referred for diagnostic esophagoscopy as to the cause of difficulty in swallowing, and as to the source of the blood that was spit up or regurgitated with food at rare intervals. While blood rarely came from the mouth, the stools showed evidences of almost constant admixture of blood, and the extreme emaciation and anemia pointed strongly to a hemorrhagic lesion in some portion of the alimentary canal. From the chief of a clinic in another hospital, with his hearty sanction for their publication, we obtained the following data as to the diagnostic steps taken: 1. A bougie had been passed into the stomach and had not shown blood on withdrawal. 2. A stomach tube had been passed every alternate day "to keep the passage open." 3. An exploratory abdominal operation had been done on a tentative diagnosis of ulceration of the stomach or duodenum. The results were negative. 4. A roentgen-ray examination had been negative as to both stomach and bowel, but had shown "a narrowing of the lower third of the thoracic esophagus suggestive of neoplasm." This had been clinically rejected because of the evidence of the bougie and stomach tube. 5. The history of the case, the duration of at least two years, the evidence of the stomach tube and bougie, and especially the age of the patient (28 years)—all these were taken together as conclusive evidence of the absence of cancer. 6. By exclusion, a tentative diagnosis of ulcer of the stomach or duodenum was reached, and an exploratory operation was done. 7. The points just mentioned, together with the negative evidence of the exploratory operation and the continued evidence of bleeding, had led to an inferential diagnosis of varicosities in the lower end of the esophagus. Then the patient had ceased attendance at the medical clinic in the hospital where these observations had been made, and appeared in Dr. DaCosta's service at Jefferson Hospital, whence he was referred to the Bronchoscopic Clinic. Dr. Gabriel Tucker passed an esophagoscope and found bleeding fungations and infiltration obstructing the esophagus at the level of the heart. His esophagoscopic diagnosis was "a bleeding fungating lesion in the lower third of the esophagus, probably cancerous." In view of previous blind instrumentation, he felt that it was impossible to exclude benign exuberant granulations from previous trauma. He took a specimen for histologic examination. Dr. Baxter L. Crawford reported the tissue as squamous-cell epithelioma.

SUMMARY

The foregoing cases are typical of many that seem to us to warrant conclusions that may be summarized as follows:

1. Vomited blood may come from any part of the air passages, upper or lower, as well as from the food passages.

2. Inferential methods of determining the source of blood in hematemesis are subject to a large percentage of error. Objective examination of all accessible portions of the air and food passages should never be neglected.

3. If examinations of the gums, mouth, nasal chambers, pharynx and larynx are negative and the roentgen ray does not definitely locate a lesion in the stomach, bronchoscopy or esophagoscopy, either or both as may be indicated, should be done to locate the source of the bleeding.

4. Blood on a bougie does not indicate a lesion in the esophagus. It is an inferential, not an objective means, and is useless for the diagnosis as to the source of blood in hematemesis. The bougie can bring blood from normal mucosa. There is much truth in the saying of Trousseau that sooner or later all patients with esophageal stenosis die of the bougie. Blind bouginage for diagnosis is no safer today than in Trousseau's day; nobody can tell where the end of the bougie is going.

5. Esophagoscopy is safe, because the esophagoscopist can see what is ahead of the tube mouth. He advances the tube when he sees a lumen; he does not

push it through tissue, normal or abnormal. It is not claimed, however, that a man who has never looked through an esophagoscope before can telegraph for an instrument, do a safe esophagoscopy, and make a certain diagnosis, any more than he could look through a microscope for the first time in his life and make a definite histologic diagnosis. Untrained hands may make a false passage with the esophagoscope as well as with the urethroscope; but the mortality from esophageal trauma is very high as compared to urethral injury.

6. Peptic ulcer of the esophagus is an overlooked cause of hematemesis. It can be diagnosticated in no way other than by esophagoscopy.

7. The cardinal rule in hematemesis with negative roentgen-ray findings should be: Follow the blood to its source by objective methods.

ABSTRACT OF DISCUSSION

DR. E. J. G. BEARDSLEY, Philadelphia: Dr. Jackson's group of workers have fully convinced me that deductive diagnosis is subject to a large percentage of errors. These patients had been under the observation and care of excellent physicians. Several of them had been seen by clinicians whose opinions are highly regarded in every medical circle. These physicians had used the deductive method of diagnosis and had been mistaken both in diagnosis and prognosis. Several of the patients reported on had been pronounced by competent medical opinion as hopelessly ill. Are we not too quick to decide that nothing can be done to save a patient because the newer methods of investigation and treatment are new and strange to us? We that work in the medical dispensaries and wards have learned the advantage of consultation with Dr. Jackson and his staff in cases of both obvious and obscure pathology of the air passages and of the upper gastrointestinal tract. We have observed that no matter how poverty stricken he may be, the investigation and treatment is just as complete and thorough as though the patient enjoyed all the surroundings of wealth. Dr. Jackson has presented a summary of the investigation of a small number of patients. We have had the advantage of observing his study of a large number. We have been impressed by his careful system, by the thoroughness with which each patient is investigated, whether the symptoms presented seem slight or severe.

DR. H. B. ORTON, Newark, N. J.: My experience in this line has been very limited. I know of one case in which a foreign body had lodged in the esophagus and ulcerated through to the bronchi and trachea, and it was not until both hemoptysis and hematemesis were found that the roentgenogram was made. Also in two other cases in which there had been hemoptysis, with unproductive cough, on passing the bronchoscope in both cases we removed a primary carcinoma of the bronchus. Varicose veins in the esophagus have been encountered, and I happened to see one case of a physician who had swallowed a piece of glass; and while there was no foreign body found, just within the esophagus there was a large bunch of varicose veins which were bleeding freely. Another case had gone on for years, with hemoptysis. This man had been working in acid fumes. A small bone was removed from the right bronchus, with no history of foreign body.

DR. ELLEN J. PATTERSON, Pittsburgh: In the case of a girl, about 14 years of age, who came into the hospital vomiting blood, the roentgen-ray findings were negative. We decided to pass a bronchoscope and find out where the blood came from. The physical findings were negative, but she was having spontaneous hemorrhage from the right bronchus. One very erroneous idea held by many members of the profession and by the laity is that a sharp foreign body will cause hemorrhage. As a matter of fact, very few of them do. Every patient coming into the hospital vomiting blood should be examined by the direct method, as inferential diagnosis is often erroneous. It is not safe to make a diagnosis without looking to see whether the blood comes from the stomach, the esophagus or the bronchi.

DR. WILLIAM B. CHAMBERLIN, Cleveland: I want to emphasize the value of direct inspection in these cases. I do not know of anything more difficult to solve than the problem of the underlying condition when a patient comes in complaining of spitting blood. We do not know until after a careful examination what the origin of this blood may be, whether from the lung, from the esophagus, from the stomach, from the upper air passages, from the posterior part of the nares and nasopharynx, from the teeth, and so forth. Naturally, the diagnosis is extremely important. In a case with some slight spitting of blood, the characteristic thing was that immediately after the ingestion of food or drinking of water there was a violent paroxysm of coughing. Examination disclosed a fistula between the left main stem bronchus and the esophagus. That is one illustration of the value of the direct method of examination. In another case, carcinoma had been diagnosed definitely by one of the best internists, as well as by one of the best roentgenologists in Cleveland. Passage of the esophagoscope showed a perfectly normal esophagus, and the diagnosis of carcinoma was refuted by the direct inspection. The obstruction was shown definitely to be due to cardiospasm. Vision will always be superior to palpation and to shadow pictures.

DR. LEON T. LEWALD, New York: Roentgen-ray diagnosis of these esophageal lesions is not at all easy, as Dr. Jackson knows, and it is only by a careful and persistent follow-up of the roentgen-ray examination on successive days and under different conditions and positions of the body, and different tests, such as the opaque capsule, that we are able to make an early diagnosis and to differentiate between benign and malignant conditions of the esophagus. I should like to ask Dr. Jackson whether he has been able to diagnose syphilitic lesions of the esophagus, or, what is perhaps still more important, syphilitic lesions of the stomach in cases in which a presumptive diagnosis of carcinoma of the stomach has been made. I know of two cases. One patient was told that he had an inoperable cancer of the stomach. He took some "patent medicine," containing probably potassium iodid, and was alive several years later. The other case is that of a man who gives a history of chancre about forty-two years ago. He now has a very definite mass in the stomach which has been regarded as inoperable carcinoma, but his appearance is more like that of a man who has syphilis of the stomach. I think it would be best, from what Dr. Jackson has told us, to get a section of the stomach through the gastroscope and make a differential diagnosis.

DR. CHEVALIER JACKSON, Philadelphia: The point brought out by Dr. LeWald is really very important, and I agree with him. It has been erroneously stated that the esophagoscope cannot make a diagnosis of syphilis of the esophagus. In the first place, the esophagoscope with us is never passed for diagnosis until we have obtained a report on the Wassermann test. Syphilis must be excluded as far as possible beforehand. In the two cases reported, biopsy was relied on for differential diagnosis. When we get a positive report as to, say, adenocarcinoma of the stomach, we would know that it is not a syphilitic lesion. With a negative Wassermann reaction in a case of blood coming from varicosities in the esophagus and no ulceration present, we conclude that this is not syphilis but a varicose condition of the blood vessels. If we have a specimen from what looks like a peptic ulcer, and the histologist finds no malignancy, and the Wassermann reaction is negative, our diagnosis by exclusion is peptic ulcer. It is a disease commoner than supposed before the days of esophagoscopy. I should like to emphasize the point I made in the paper and which I mentioned casually, namely, that we never pass an esophagoscope until we have had a roentgen-ray examination. In about 95 per cent. of the cases all we do, as in the case of Dr. LeWald's patient, is to confirm the roentgen-ray examination; but in the remaining 5 per cent. we add data of vital importance. The roentgen-ray examination is an objective method, and by it the outer borders of the lesions are mapped out in an important way. There is only one lesion which the roentgen ray

fails to show, and that is peptic ulcer. We have studied with Dr. Manges and Dr. Pancoast a number of cases of peptic ulcer, and this is our conclusion. The point brought out by Dr. Patterson is very important—one I did not mention in the paper—namely, that all patients giving a history of spitting blood, supposed to be due to foreign body, the air and food passages should be searched for organic lesions by the laryngoscope, bronchoscope and esophagoscope.

SYPHILITIC ELEPHANTIASIS OF THE SCROTUM *

CLEMENT H. MARSHALL, M.D.
MEMPHIS

Syphilis as a possible cause of elephantiasis has long been recognized. Allan Webb,[1] in 1855, considered syphilis the cause of elephantiasis of the penis and scrotum in some cases long before the filarial organism was discovered. Mracek and Lang,[2] in 1889, described a case of elephantiasis produced by a diffuse hypertrophic syphiloma. Fourner described the condition in his textbook as a well recognized manifestation of syphilis. Francis,[3] in 1894, reported cases associated with tertiary syphilis. More recently, Adamson,[4] Ravogli,[5] McDonagh,[6] Petrov,[7] Levy-Bing and Gerbay,[8] Lintz,[9] and Taussig[10] have reported cases of syphilitic elephantiasis of the male and female genitalia and lower extremities.

According to the literature and to my own observations, elephantiasis of the scrotum is a rare condition in America. Elephantiasis of the lower extremities and of the external genitalia of the female are much more common findings. Only one case involving the scrotum has been observed in the Memphis General Hospital and its outpatient department during the last six years. Since a vast majority of these patients have been negroes, in whom the condition is most often found, I feel that elephantiasis of the scrotum from any cause must be a rare condition in this country.

Fig. 1.—Elephantiasis of scrotum.

REPORT OF CASE

The following case was recently studied in the Memphis General Hospital and outpatient department:

E. G., a colored man, aged 30, entered the hospital in May, 1924, because of marked enlargement of the scrotum. This enlargement had been coming on gradually for five or six months without pain or any local or general symptoms.

In 1920, the patient came to the outpatient department because of a foreign body in the eye. A Wassermann test was taken at that time and found to be four-plus positive. He stated at that time that he had a penile lesion and generalized rash about nine years before. He did not return for antisyphilitic treatment, nor did he receive any treatment up to the time he came to the hospital four years later.

Examination in the hospital showed the patient to be well nourished and to have no acute illness. He had a generalized adenitis, the nodes being small and hard. The remainder of the examination was negative except for the genitalia.

The penis was markedly enlarged, the prepuce greatly thickened so that retraction was impossible. The scrotum was many times the normal size and very firm on palpation. The skin could not be picked up between the fingers because of the extreme thickness and leathery consistency. There was no pitting on pressure. Over the surface were a few smooth, round tumors, about the size of a pea, and numerous flat-topped warty papules, which were both discrete and confluent. The normal lines of the skin were greatly exaggerated. There were no ulcers, excoriations, fissures or sinuses, nor was there any inflammation of the skin or tenderness on palpation. The testes could not be felt because of the great thickness of the overlying skin. The Wassermann reaction was four-plus on two examinations. The circumference of the penis was 6½ inches at the widest point. The circumference of the scrotum was 18 inches and, from the perineum to the base of the penis, 15½ inches. The skin was scarified and cultures were made, all of which remained sterile.

There were no pathologic changes in the prostate or seminal vesicles. The former was small and firm with both lobes uniform in size, the median raphe obliterated and the notch preserved. The seminal vesicles were not palpable. The inguinal lymph glands were slightly enlarged and shotty, as were the other superficial glands.

Biopsies of three of the warty lesions were made, and one of the smooth tumors was removed for microscopic study. Sections were stained with hematoxylin and eosin, Unna's polychrome methylene blue, Pappenheim's plasma-cell stain and acid orcein.

The smooth round tumor proved to be a sebaceous cyst and was filled with a whitish material of a soft and cheesy consistency. The epidermis in the other sections showed

* From the Department of Dermatology, University of Tennessee College of Medicine.

* Read before the Section on Dermatology and Syphilology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Webb, Allan: Indian Ann. M. Sc. **4**: 619, 1855, quoted by Lintz (Footnote 9).
2. Mracek and Lang, quoted by McDonagh (Footnote 6).
3. Francis: Brit. J. Dermat., 1894, p. 225, quoted by McDonagh (Footnote 6).
4. Adamson: Elephantiasis Associated with Tertiary Syphilis, Brit. J. Dermat., 1910, p. 161.
5. Ravogli, A.: Syphilitic Elephantiasis of the Genitals, Lancet-Clinic **115**: 573 (June 17) 1916.
6. McDonagh: Case of Syphilitic Elephantiasis of the Scrotum, Brit. J. Dermat., 1912, p. 24.
7. Petrov: Sur l'éléphantiasis syphilitique, Ann. d. mal. vén. **10**: 337, 1915.
8. Levy-Bing and Gerbay: Deux cas d'élephantiasis syphilitique des organes génitaux, Ann. d. mal. vén. **13**: 600, 1918.
9. Lintz, J.: Elephantiasis with Reference to Syphilis, New York M. J. **113**: 535 (April 6) 1921.
10. Taussig, F. J.: Am. J. Obst. & Gynec. **3**: 281 (March) 1922.

practically no change, there being only a slight hyperkeratosis and a moderate acanthosis in some fields. The striking pathologic changes were in the dermis. There was a marked increase in collagen and a decrease in elastin. The collagen bundles were greatly enlarged and were apparently responsible for the extreme thickness and firm consistency of the skin. Numerous dilated lymph spaces of various sizes were scattered throughout. A few hair follicles were found, but

Fig. 2.—Appearance of section, slightly reduced from a photomicrograph with a magnification of 60 diameters.

no sebaceous nor sweat glands. There was considerable perivascular infiltration, made up for the most part of small lymphocytes and plasma cells with a few mast cells. The plasma cells appeared in large numbers in most fields. The vessel walls were thickened, especially those of the arteries. The media was thickened and the endothelium showed proliferation, the nuclei extending well out into the lumen. Many of the smaller arterioles were completely obliterated. No bacteria could be found in the sections.

The microscopic picture was typical for that of elephantiasis and confirmed the clinical diagnosis. The microscopic findings were those for the most part accepted by all observers. Unna found large numbers of plasma cells as were present in our sections, while others have found none or only a very few plasma cells. Only a few observers have mentioned the blood vessel involvement so apparent in our sections.

COMMENT

There has been a great deal of controversy over the etiology of elephantiasis both of the sporadic and of the tropical form, especially of the latter, particularly as to what part the filaria organism plays in these cases. Sabouraud,[11] in 1892, first found the streptococcus to be responsible for the condition in five sporadic cases studied by him. By making cultures from the scarified skin during the inflammatory stage, he obtained pure cultures of Fehleisen's streptococcus. His work has since been verified, and it is now generally accepted that the streptococcus is responsible for the majority of such cases. His work likewise stimulated investigation of tropical cases along similar lines, and Powell,[12] Dubruel,[13] Prout [14] and others now believe that the endemic form is bacterial in origin. Manson [15] believes that the filaria predisposes to bacterial invasion through injury to the lymphatics.

That merely the blocking of the return lymph flow will not always produce elephantiasis is frequently demonstrated. Surgical removal of lymph glands is often followed by edema, but not often by elephantiasis. Unna [16] believed the essential factor to be a venous thrombosis and that lymphatic obstruction need not be present. LeDantec [17] and Sabouraud likewise believe that elephantiasis can occur independently of lymphatic obstruction. In Elliott's [18] case, as in ours, there was marked involvement of the arteries, with thickening of the media and proliferation of the endothelium. Mahon [19] attempted to produce elephantiasis in laboratory animals by ligating the femoral vein and by dissecting out the lymphatics and at the same time injecting streptococci from cultures taken of a patient with elephantiasis. Edema occurred, but elephantiasis did not develop. He concluded that the filaria organism probably excites an inflammatory change predisposing the tissues to bacterial growth, which in turn produces the hypertrophy.

Although the sporadic type is generally accepted as streptococcic in origin in most instances, there are a few cases in the literature which were undoubtedly syphilitic or in which syphilis played an important part in the etiology. McDonagh's patient, with definite evidence of tertiary syphilis, in whom a careful search for streptococci was made with negative results, responded readily to mercury, the elephantiasis involuting soon after the mercury was started. Petrov treated one case with improvement in six days and complete disappearance of the scrotal hypertrophy after two months. Levy-Bing

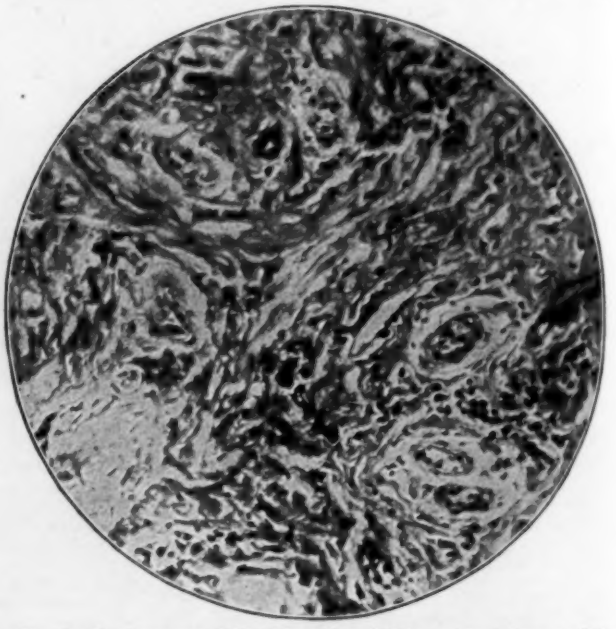

Fig. 3.—Involvement of blood vessels; slightly reduced from a photomicrograph with a magnification of 185 diameters.

and Gerbay obtained similar results in two cases. Lintz reported excellent results with antisyphilitic treatment in two cases of syphilitic elephantiasis of the leg.

11. Sabouraud: Sur la parasitologie de l'éléphantiasis nostras, Ann. de dermat. et de syph., 1892, p. 592.
12. Powell: Brit. M. J., 1908, p. 1364.
13. Dubruel, quoted by Shattuck: Boston M. & S. J., 1910, p. 107.
14. Prout: Brit. M. J., 1908, p. 1364.
15. Manson: Tropical Diesases, Ed. 4, 1908.
16. Unna: The Histopathology of Diseases of the Skin, Translated by Walker.
17. LeDantec, quoted by Sistrunk, W. E.: The Kondoléon Operation for Elephantiasis, J. A. M. A. **71**: 800 (Sept. 7) 1918.
18. Elliott, J. A.: Elephantiasis Nostras, J. Cutan. Dis. **35**: 17 (Jan.) 1917.
19. Mahon, G. D.: Am. J. M. Sc. **165**: 875 (June) 1923.

Our patient showed improvement soon after antisyphilitic treatment was instituted, and three months later the thickness of the skin was greatly reduced and soft, so that the testes were now easily palpated. Six months after treatment was started, the circumference of the scrotum was reduced from 18 inches to 11 inches.

The hypertrophy, coming on gradually without chills and fever or without any attacks of pain, erythema or erysipelas, which are almost constant findings in the streptococcic type, are the chief points against this case being of that etiology. Likewise the negative cultures and absence of bacteria in the sections do not favor streptococcus as the etiologic agent. The history of syphilis, the positive Wassermann reaction on several occasions and the rapid involution under antisyphilitic treatment point to syphilis as the chief if not the only etiologic agent in this case.

CONCLUSIONS

1. Although most cases of sporadic elephantiasis are streptococcic in origin, undoubtedly a few cases are syphilitic.
2. Arteritis and phlebitis probably play an important part in the stasis and subsequent hypertrophy.
3. Improvement, if not complete involution, can be obtained by antisyphilitic treatment in some cases.

ABSTRACT OF DISCUSSION

DR. JOHN H. STOKES, Philadelphia: My impression is that the cause of scrotal elephantiasis may lie back of the scrotum and be ascribable, perhaps, to gummatous changes in the lymph nodes in some cases. In tuberculous elephantiasis of the vulva and of the leg, tuberculous obliteration of the lymph nodes may be responsible for much of the picture produced by lymphatic stasis, plus, in some cases, intercurrent streptococcal infection.

CONTRIBUTIONS TO THE PHYSIOLOGY OF THE STOMACH

IX. THE CAUSES OF GASTRIC SECRETION: THEIR PRACTICAL SIGNIFICANCE AND THE MECHANISMS CONCERNED *

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When my colleagues and I began the study of gastric secretion, it was generally taught that gastric secretion following a meal was caused (*a*) psychically by the sight, smell and taste of food, and (*b*) chemically by the local action in the stomach of specific substances in or derived from food and by a hormone, gastrin, which was elaborated by the contact of food substances with the gastric mucosa.

Evidence that has been accumulating during the last five years has made it necessary for us to change some of our views and to present a new classification of the factors concerned in the genesis of gastric secretion.

THE CEPHALIC PHASE OF GASTRIC SECRETION

The observations and experiments of Bidder and Schmidt,[1] Richet,[2] Pawlow,[3] Carlson[4] and others have demonstrated unequivocally that the sight, smell and taste of food cause the gastric glands to secrete, provided the person has an appetite. Luckhardt and Johnston[5] have found that the suggestion of the eating of a meal to hypnotized subjects provokes a copious secretion of gastric juice. Such stimuli are supposed to act by arousing conditioned reflexes that have been established by the pleasure and feeling of contentment derived from the cessation of hunger and the satisfaction of the appetite that results from the ingestion of a meal. The resulting secretion has been termed the psychic, or appetite, secretion.

Recently, Zeliony[6] has reported that the gastric glands of a decerebrate dog will secrete when the animal tastes food (sham feeding). This observation shows that other than solely cerebral reflexes are concerned in the excitation of the gastric glands from the head region.

This initial phase of gastric secretion we have termed the cephalic phase, denoting that it is due to stimuli acting on sensory end-organs located in the head. It is evident, then, from the foregoing facts that the cephalic phase of gastric secretion is caused by (*a*) reflexes through the cerebral cortex (psychic), and by (*b*) reflexes through the thalamus, midbrain or medulla, the afferent sensations being caused by the sight, smell and taste of food, chewing and swallowing quite probably playing the rôle of decreasing the threshold of the reflex arcs concerned. The vagi are the efferent nerves concerned in conducting the impulses from the gastric secretory center or centers to the gastric glands.[3]

THE GASTRIC PHASE OF GASTRIC SECRETION

Since it is well established that gastric digestion after a short delay will be initiated and carried to completion in the absence of the cephalic phase, obviously stimuli acting in the stomach or in other parts of the gastrointestinal tract serve as excitants. As a matter of fact, the cephalic phase of gastric secretion usually disappears in from thirty to forty-five minutes, and the remaining period of gastric digestion (from four to five hours) must be accomplished by a secretion resulting from sources other than cephalic stimuli.

Mechanical Stimulation.—Magendie,[7] Tiedmann and Gmelin,[8] Beaumont,[9] Schiff,[10] Grützner[11] and Heidenhain[12] all presented evidence that the gastric glands could be stimulated mechanically by indigestible substances. Only the work of Beaumont and Heidenhain was apparently controlled, however. Blondlot[13] could not confirm Beaumont and other observers. Pawlow[3] has expressed the opinion that the mechanical stimulation of earlier observers was due to psychic reflex activity. He obtained negative results when he stimulated the mucosa of the stomach with sand, a test tube brush, etc., but did observe that the distention of the stomach with a balloon sometimes provoked secretion. He expressed the opinion that this stimulation was psychic, as it occurred only in dogs that were hungry. He did not sever the vagi, however, in order to put to test this opinion.

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* From the Hull Physiological Laboratory, the University of Chicago.

1. Bidder and Schmidt: Die Verdauungsäfte, 1852.
2. Richet: J. Anat. et Physiol., 1878, p. 526.
3. Pawlow: The Work of the Digestive Glands, London, 1910.
4. Carlson: The Control of Hunger in Health and Disease, Chicago, 1916.
5. Luckhardt, A. B., and Johnston, R. L.: Am. J. Physiol. **70**: 174 (Sept.) 1924.
6. Zeliony: Eleventh International Physiologic Congress, Edinburgh, July, 1923.
7. Magendie: Précis élémentaire de physiologie, Paris **2**, 1817.
8. Tiedmann and Gmelin: Die Verdauung nach Versuchen, Leipzig **2**, 1824.
9. Beaumont: Experiments and Observations on the Gastric Juice, Plattsburg, 1883.
10. Schiff: Leçons sur la physiologie de la digestion, Paris **2**: 1867.
11. Grützner: Neue Untersuchungen über Bildung und Ausscheidung des Pepsin, Breslau, 1875 (quoted by Heidenhain).
12. Heidenhain, in Hermann's Handbuch der Physiologie **5**, III, 1883.
13. Blondlot: Traité analytique de la digestion, Paris, 1843.

Recently Lim, Ivy and McCarthy[14] have found, by using dogs prepared with a pouch of the entire stomach (Fig. 1) and an end-to-end duodeno-esophageal anastomosis, that distention of the stomach with a balloon (from 150 to 300 c.c. of air) or with wooden beads stimulates the gastric glands (Table 1). This stimulus applied for half an hour yields from 20 to 50 c.c. of juice of high acidity. The latent period of response varies from five to fifteen minutes. The stomach of

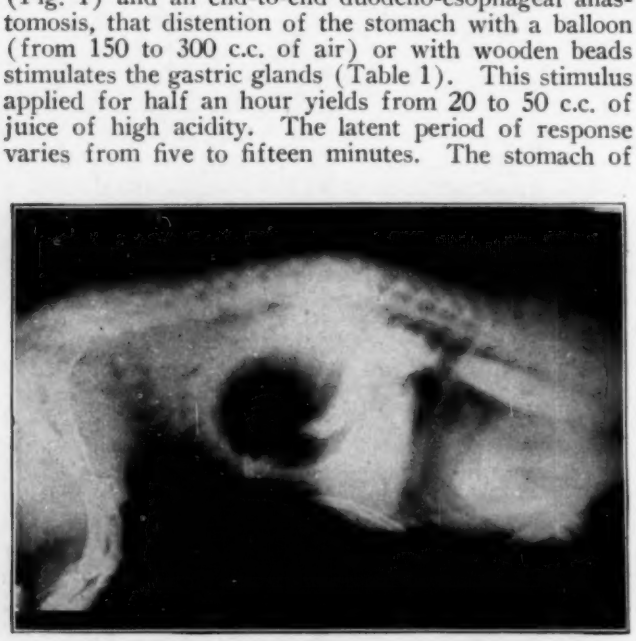

Fig. 1.—Pouch of entire stomach distended with a balloon (250 c.c. of air) and a duodeno-esophageal end-to-end anastomosis; peristalsis in esophagus.

man also responds to mechanical distention. Our method of stimulation differed from that of Pawlow in that he distended the balloon more than we did and intermittently collapsed and distended it only for a period of from ten to fifteen minutes, whereas we maintained the distention continuously for half an hour or more. Not all dogs respond. We believe that the failure of response in some animals is due to pain resulting from traction on adhesions. Necropsy has verified the complete section of the vagi with the possible exception of a small branch that passes to the celiac ganglion that sometimes leaves the vagus above the diaphragm. That impulses carried by way of the vagi and splanchnics are not concerned in the stimulation is shown by the response of Bickel denervated pouches and a completely transplanted gastric pouch[15] (into the mammary gland) to mechanical distention.

Chemical Stimulation of or by Way of the Gastric Mucosa.—That Beaumont believed in the chemical stimulation of the gastric glands is evident from his writings. Blondlot,[13] however, offered the first definite expression of this concept. The work of Pawlow and his colleagues, including the experiments of Zeliony and Savitsch,[16] has shown that the gastric glands can be stimulated by local contact of substances with the gastric mucosa. In the experiments of some of the earlier workers, however, the possibility of substances stimulating from the intestine or by mechanical distention was not considered.

Edkins[17] has proposed a hormone theory, which maintains that the contact of acid and food substances with the pyloric mucosa causes the elaboration and absorption into the blood of a hormone, gastrin, which is carried to the gastric glands and excites them. As originally stated the theory is inadequate, but as a concept it has neither been proved nor disproved. It has been criticized by several workers within recent years.[18] The chief facts opposing it are: (1) that a gastric secretin can be isolated from many animal as well as plant tissues, meaning that a gastric secretin is not specific as to location, and probably not to action or kind, and (2) that attempts to demonstrate a hormone in the blood has met with failures or unsatisfactory results.[19] These facts should not be dogmatically interpreted, however, to mean that a hormone is not concerned in gastric secretion.

By using a pouch of the entire stomach, we[14] have found (Table 2) that meat or meat juice is the only one of the common food substances as yet used that stimulates gastric secretion by local action on the gastric mucosa when applied in amounts insufficient to involve stimulation by distention. Histamin and β-alanin are pure chemical substances that stimulate on local gastric application.

THE INTESTINAL PHASE OF GASTRIC SECRETION

The first investigator to observe that the gastric glands could be excited from the intestine was Pawlow. This observation has been confirmed by others.[20] Nevertheless, no physiologic significance has been ascribed to such observations.

Ivy and McIlvain[20] and Ivy and Javois[21] have recently found so many physiologically important substances that excite gastric secretion from the intestine that they have been led to consider that intestinal stimulation is an important factor in the genesis of gastric secretion. Garbat[22] has presented confirmatory observations on patients.

That there is an intestinal phase of gastric secretion has been unequivocally demonstrated by Ivy, Lim and

Fig. 2.—Gastric pouch transplanted into the mammary gland.

McCarthy[23] by observing that a marked secretion of gastric juice (from 200 to 400 c.c. in twenty-four

14. Lim, Ivy and McCarthy: Quart. J. Exper. Physiol. **15**: 13, 1925.
15. Ivy and Farrell: Am. J. Physiol., to be published.
16. Zeliony and Savitsch: Arch. f. d. ges. Physiol. (Pflüger's) **101**: 136, 1913.
17. Edkins: Am. J. Physiol. **33**: 133, 1906; **38**: 263, 1909.
18. Ivy, A. C., and Whitlow, J. E.: Am. J. Physiol. **55**: 306, 1921; **60**: 578 (May) 1922. Lim: Quart. J. Exper. Physiol. **13**: 71-79, 1922. Keeton, R. W.; Koch, F. C., and Luckhardt, A. B.: Am. J. Physiol. **51**: 454, 469, 527 (April) 1920; **52**: 508 (July) 1920. Ivy, Lim and McCarthy: Am. J. Physiol., to be published.
19. Ivy, Lim and McCarthy (Footnote 18).
20. Ivy, A. C., and McIlvain, G. B.: Am. J. Physiol. **63**: 418 (Feb.) 1923.
21. Ivy, A. C., and Javois, A. J.: Am. J. Physiol. **71**: 583, 591, 604 (Feb.) 1925.
22. Garbat: Tr. Twenty-First Annual Meeting, American Gastro-Enterological Association, 1923, p. 45.
23. Ivy, Lim and McCarthy: Quart. J. Exper. Physiol. **15**: 55, 1925.

hours) occurs in a pouch of the entire stomach when a dog with an end-to-end duodeno-esophageal anastomosis is fed. It is evident that in such an animal the food passes directly from the esophagus into the intestine without coming into contact with the stomach. When cooked ground meat, bread and milk are fed, the pouch of the entire stomach does not begin to secrete for from two to four hours. If the food is predigested with pancreatin or hydrochloric acid-pepsin, the entire stomach pouch secretes within an hour after feeding. Whether or not the drinking of water stimulates gastric secretion in such an animal depends to a large extent on the degree of thirst and the time since the last meal—the shorter the time since the last meal, the greater the stimulation.[23]

Since we have not been able to observe stimulation of gastric secretion on distending the intestine,. we believe that intestinal stimulation is due entirely to chemical substances in the food or, preferably, that arise from digestive or bacterial action in the intestine, which act on or by way of the intestinal mucosa.

MECHANISMS CONCERNED IN GASTRIC SECRETION

The theoretically possible mechanisms concerned in the direct excitation of the gastric gland cells can be thus summarized:

1. Specific secretory nerves similar to those innervating the salivary glands, being excited by: (*a*) stimuli acting in the head region (cephalic phase of gastric secretion; (*b*) secretagogues acting on the mucosa of the stomach, giving rise to long reflexes through a secretory center in the medulla and to short local reflexes through enteric plexuses in the gastric mucosa, and (*c*) secretagogues acting on the mucosa of the intestine, giving rise to reflexes through the celiac ganglion or through enteric connections.

2. An increase in the active blood flow through the gastric glands, caused by: (*a*) the reflex excitation of vasodilator nerves; (*b*) direct action by way of the mucous membrane (mild irritation); (*c*) gastric or intestinal motility, and (*d*) an increase in total blood volume.

3. Direct mechanical or chemical action on the gland cells by the food.

4. A hormone elaborated by the mucosa of the stomach and intestine by the mechanical or chemical contact of food substances or secretagogues, which acts, after being absorbed into the blood or lymph, (*a*) by direct action on the gland cells, or (*b*) as a vasodilatin causing increased vascularity and permeability, or both.

5. Secretagogues present in the raw food or arising from the digestion of food substances, which act as a hormone might act.

6. A "digestive blood state," by which we mean that some change occurs in the blood due to the secretion of the digestive glands and the entrance of food into the gastro-intestinal tract, such as a change in reaction or a mobilization of substances necessary for secretion, which renders the blood favorable for the formation of gastric juice.

Several or all of these possible mechanisms may be concerned. One of them should not be upheld or emphasized to the exclusion of the others until final proof is at hand.

Beaumont [9] thought that both mechanical and food stimuli irritate the blood vessels, causing increased vascularity and, as a consequence, secretion. Blondlot [13] was of the opinion that gastric secretion was caused reflexly when nerve endings in the gastric mucosa were appropriately stimulated by food. Heidenhain [12] believed that a local reflex was concerned, but also thought that mechanical stimuli might have a direct action on the gland cell, as occurs in *Drosera*, a plant that exudes a digestive juice on being mechanically irritated. Pawlow [3] taught that long and local reflexes are concerned, but also upheld the possibility that a hormone or secretagogues, acting by way of the blood, might be involved. Edkins [17] has advanced the hormone theory. Popielski [24] has presented evidence supporting a local reflex mechanism and has enunciated a humoral theory which differs chiefly from Edkins' in that "gastrin" is called a "vasodilatin" and that the latter arises in the process of digestion and, on being absorbed, produces an effect by increasing vascularity and permeabil-

TABLE 1.—*Effect of Mechanical Stimulation of Stomach* *

Procedure	Hour	C.c.	Free HCl	Total HCl	Output HCl
Control.....	1:45-2:00	1.0	0	082	0.8
Balloon introduced into stomach and inflated with 200 c.c. of air (2-3 p.m.)	2:00-2:15	4.0	255	300	12.0
	2:15-2:30	6.0	291	328	20.0
	2:30-2:45	6.6	319	364	24.0
	2:45-3:00	6.1	346	391	23.9
	3:00-3:15	1.8	2.8	255	4.1

* Entire stomach pouch (No. 6); duodeno-esophageal anastomosis.

TABLE 2.—*Effect of Raw Meat and Raw Meat Juice on the Stomach* *

Procedure	Hour	C.c.	Free HCl	Total HCl	Output HCl
Control.....	1-2	5.0	0	064	3.2
	2-3	4.2	0	027	1.1
100 gm. raw meat (volume 70 c.c.) introduced into the stomach (3-4 p.m.)	3-4	11.5	0	346	39.8
	4-5	8.7	173	346	30.1
	5-6	4.0	182	283	11.3
	6-7	4.7	164	256	12.0
Control.....	1-2	1.0	064	346	3.5
Stomach irrigated with 20 c.c. concentrated meat juice (2-3 p.m.)	2-3	45.0	0	547	177.0
	3-4	7.0	196	373	26.0
	4-5	0.5	201	309	1.5

* Entire stomach pouch No. 6; duodeno-esophageal anastomosis.

TABLE 3.—*Gastric Secretory Response to a Meal of a Dog with an Entire Stomach Pouch* *

Procedure	Hour	C.c.	Free HCl	Total HCl	Output HCl	Comment
Control.....	2:30-3	2.2	063	136	3.0	
	3-3:30	2.2	045	118	2.6	
	3:30-4	3.1	082	136	4.2	
Meal at 4 p.m.	4-5	4.6	069	119	5.4	
150 gm. meat	5-6	4.9	054	119	5.8	
100 gm. bread	6-7	4.5	045	127	5.7	
500 c.c. milk	7-8	6.0	054	127	7.6	
	8-9	5.0	136	228	11.4	
	9-10	7.0	182	228	16.0	
Dog finished meal at 11 p.m.	10-11	9.2	228	282	25.9	
	11-12	10.0	218	264	26.4	Stool
	12-1	15.8	291	355	56.1	
	1-2	11.7	218	264	30.9	
	2-3	9.8	191	255	25.0	
	3-4	16.0	273	319	51.0	
	4-5	18.0	182	228	41.0	Stool
	5-6	21.5	237	300	64.5	
	6-7	6.7	191	255	17.1	
	7-8	11.4	300	355	40.4	
	8-9	6.0	237	273	14.4	
	9-10	13.0	319	373	48.5	
	10-11	8.8	291	337	29.6	
	11-12	12.3	255	300	36.9	

* Preparation No. 6; dog's weight, 7.6 kg.; duodeno-esophageal anastomosis; total quantity of juice secreted in twenty hours, 202.2 c.c.

24. Popielski: Zentralbl. f. Physiol. **16**: 121, 1902; Arch. f. d. ges. Physiol. (Pflüger's) **126**: 483, 1909; **128**: 222, 1910; Zentralbl. f. Biochem. u. Biophys. **11**: 724, 1911; Zentralbl. f. Physiol. **24**: 635, 1910; **25**: 465, 1911; Arch. f. d. ges. Physiol. (Pflüger's) **144**: 135, 1912; **160**: 136, 1913; **178**: 214-327, 1920.

ity. Zeliony and Savitsch [16] have presented evidence that supports the existence of a local reflex mechanism. Ivy and Whitlow,[18] working on dogs with partially denervated pyloric pouches, and Lim,[18] making observations following the transfusion of fed blood, obtained results that did not support a humoral mechanism. Lim, Ivy and McCarthy [14] have advanced the hypothesis that all stimuli that excite gastric secretion act essentially by increasing the active blood flow through the gastric glands, but they do not hold this view to the exclusion of others.

Recently we [19] have performed long time (three days) cross-circulation experiments on Pawlow pouch dogs, the results of which possibly suggest, but do not warrant, the conclusion that a humoral mechanism is concerned in the genesis of gastric secretion.

Within the last seven months, Mr. J. I. Farrell and I have been successful in transplanting by a two-stage operation a gastric pouch (Fig. 2) into the mammary gland of four dogs. We have found that the transplanted pouch secretes a gastric juice containing free acid from two to six hours after a meal. Such a pouch, although somewhat refractory, responds to "gastrin" and histamin administered subcutaneously.

TABLE 4.—*Gastric Secretory Response of a Transplanted Gastric Pouch Dog*

Procedure	Time	Gastric Secretion: Amount, C.c.	Gastric Secretion: Free Acid	Gastric Secretion: Total Acid
Response to Meal Ten Days after Second Operation Completing the Transplantation				
Continuous Meal at 9	7:30-9	3.0	0	0.009
	9-10:30	1.5	0	0.063
	10:30-11:30	1.4	0	0.063
	11:30-12:30	1.5	0.082	0.173
	12:30-1:30	1.8	0.091	0.182
	1:30-3:00	2.3	0.091	0.145
	3-4	1.7	0.100	0.145
	4-5	1.4	0.073	0.218
	5-6	1.9	0.082	0.182
	6-7	0.9	0.036	0.110
	7-8	0.8	0.036	0.073
	8-9	1.2	0	0.091
	9-10	0.3	0	0.036
	10-11	0.8	0	0.036
Response to Meal Three Months after Second Operation Completing the Transplantation				
Continuous Meal at 11	9-11	0.7	0	0.009
	11-12	0.8	0	0.018
	2-4	1.5	0.027	0.082
	4-5:30	2.2	0.027	0.082
	5:30-7	2.5	0.063	0.197
	7-11	3.0	0.063	0.118

The foregoing observation is, we believe, unequivocal evidence that a humoral mechanism is concerned in gastric secretion. It does not, however, prove or disprove a hormone or a secretagogue mechanism.

PRACTICAL SIGNIFICANCE

Time and space do not permit a detailed consideration of the causes and mechanisms involved in the various disturbances of gastric secretion observed clinically. We believe that the clinician can take the facts that have been presented above and use them to explain a number of the abnormal conditions of gastric secretion that he observes.

For example, the hypernormal secretion that is associated with pylorospasm or pyloric stenosis can be adequately explained in the following manner: The retention of food in the stomach leads to an augmentation of the gastric and intestinal phases of gastric secretion. The gastric phase is augmented by an increased mechanical stimulation coincident with enhanced motility and blood flow, and by more prolonged action of secretagogues that are naturally present in such food substances as meat, or that result from digestion in the stomach. The intestinal phase is augmented because the chyme is more completely hydrolyzed, as the result of its retention in the stomach, so that when it is ejected into the doudenum it is more readily and rapidly digested. This more rapid digestion in the intestine means an increase in the concentration of secretagogues acting on or by way of the intestinal mucosa.

Whether or not an enterologic disturbance causes a hypernormal or hyponormal secretion of gastric juice depends on the degree to which certain variable factors operate, such as the degree of pylorospasm, the amount of diarrhea or time of action of the chyme in the intestine, the amount of putrefaction, the degree of change of permeability of the intestinal mucosa and toxemia, and the amount of passive hyperemia. Some of the factors are positive, leading to hypernormal secretion, and some negative, leading to hyponormal secretion. If the reflex pylorospasm is marked, hypernormal secretion would be observed. If the diarrhea is marked, hyponormal secretion would result, as Ivy and Javois [21] and Ivy, Lim and McCarthy [22] have observed. If the degree of putrefaction is marked, amins being liberated, hypernormal secretion would result, provided the toxemia is not too great. Ivy and Javois have shown that a large number of amins and allied substances stimulate gastric secretion when given by mouth. Active hyperemia would favor secretion; a passive hyperemia would depress. In other words, whether or not an enterocolitis causes a hypernormal or hyponormal secretion of gastric juice depends on the sum total of the positive and negative factors, or the picture that the particular case presents.

Experimentally, it has been found that cholecystectomy,[25] gastric ulcer,[26] pancreatectomy, [27] ligation of the pancreatic ducts (atrophy of the pancreas),[28] appendicitis and visceral adhesions [29] may or may not cause a hypernormal secretion, although a hypernormal secretion is most frequently observed in these conditions. The variations in the experimental results and clinical observations in these and other conditions are to be expected because of the multiplicity of factors concerned in the secretion of gastric juice.

SUMMARY AND CONCLUSIONS

1. Gastric secretion can be divided into three phases with reference to cause: (1) The cephalic phase, caused by (*a*) reflexes through the cerebrum (psychic) and by (*b*) reflexes through the thalamus, midbrain and medulla, excited by the sight, taste and smell of food in the presence of appetite. (2) The gastric phase, caused by (*a*) mechanical distention of the stomach and by (*b*) the action on or by way of the gastric mucosa of substances in the food. (3) The intestinal phase, caused by the action on or by way of the intestinal mucosa of substances in the food or resulting de novo from digestion. Meat is the only food thus far studied that contains a substance that stimulates on contact with the gastric mucosa.

2. A gastric pouch has been transplanted subcutaneously.

3. A humoral mechanism is concerned in gastric secretion.

25. Meyer, Jacob; Ivy, A. C., and McEnery, E. T.: Effect of Cholecystectomy on Gastric Secretion, Arch. Int. Med. **34**: 129 (July) 1924.
26. Dragstedt, L. R., and Vaughn, A. M.: Gastric Ulcer Studies, Arch. Surg. **8**: 791 (May) 1924. Hardt, L. L. J.: Am. J. Physiol. **40**: 314 (April) 1916.
27. Steinberg, M. E.: Am. J. Physiol. **56**: 371 (July) 1921.
28. Blomberg, Comstock, Fauley and Ivy, to be published.
29. McWhorter, G. L.: Am. J. Med. Sci. **155**: 672 (May) 1918.

THE POOR RISK FOR SURGERY OF THE PELVIC ORGANS*

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[EDITORIAL NOTE.—This paper together with the papers of Drs. Walters and Mayo, and Lahey, which follow it, conclude the symposium on the "Poor Surgical Risk." In our last issue we published the papers of Drs. Thalhimer, Jones, McKittrick and Root, and Orr and Haden.]

Within the last decade there has been a radical change in the point of view concerning surgical contraindications because of the incalculable improvement in the choice and methods of administering various anesthetics. Formerly the selection lay between chloroform and ether. The first, because of its subtle and catastrophic dangers, was gradually eliminated as a routine drug, for, in addition to the immediate risks attending its use, laboratory investigations have revealed the frequency of toxic lesions occurring in the liver and kidneys, ranging from minor to major issues, indeed to as lethal an event as acute yellow atrophy of the liver.

Chloroform has therefore lost its place of equality as a surgical and obstetric anesthetic, and has fallen into the discard, ether taking its place. With junior residents of little or no experience as administrators of this drug it, too, although provocative of fewer immediate fatalities, was followed by a large number of serious sequelae, such as bronchitis, pneumonia and nephritic disturbances. Experience has shown that the grave dangers of ether are largely dependent on lack of skill in its administration, and they have noteworthily been minimized through the substitution of efficient anesthetists for untrained novices. Every well equipped hospital now accepts without question the necessity for a specialized administrator of anesthetics, and, under this plan, if a student or junior intern functions as an anesthetist, it is only under the direct supervision of such an expert.

In this prefatory statement, one may easily read between the lines and see that the lesser degrees of cardiac, pulmonary and nephritic lesions, which a decade or more ago stood in the first rank of conditions very positively barring the use of any anesthetic, may largely be discounted now unless of exaggerated gravity, such as when there is a failure in cardiac compensation; when the pulmonary lesion is of acute or advanced type; when the nephritic disease is so critical that the kidneys are on the verge of a breakdown, or when the pathologic lesion is in the terminal phase of arteriosclerosis. Under the expert administration of ether, imperative and even elective operations may with relative safety be performed, even in the presence of conditions which formerly would have been recorded as absolutely prohibitive.

As one views this change in attitude, therefore, it is attributable not so much to a reversal of position as to an amelioration of the graver forecasts through the judicious care and protecting skill of well trained anesthetists. Further to reduce to a minimum the risks of complete ether anesthesia, in many clinics nitrous oxid or ethelene gas is now largely carrying the anesthetic burden. Again, the use of local and spinal anesthesia is bulking much larger in surgical literature than formerly, and even when not employed as a method of choice in routine work they, nevertheless, may be chosen in a particularly grave case with a definite reduction in mortality in which any form of inhalation anesthesia is fraught with undue hazard. Of all methods, spinal anesthesia requires the greatest skill in its manipulation and will probably never obtain general vogue.

It is not my desire to discuss the relative merits of various anesthetics, but my chief purpose is to point out the crying necessity for the greatest possible skill in their administration. Because the anesthetist today occupies a premier position in the staff of surgical assistants, the frequency and gravity of postoperative sequelae, so far as the patient's general condition is concerned, are reduced to a minimum, provided the patient has had a careful preoperative study. Again, a very urgent necessity is the more careful preparation of patients for operation, or, as Crile has so picturesquely put it, the preparation of the patient for the storm. Less drastic purgation is now the rule, especially when induced within twenty-four hours before the operation, and the greatest care is observed in increasing the water intake both before and after an operation.

In my experience the best insurance against renal and intestinal complications is the administration, by enteroclysis, of a liter of sodium bicarbonate solution (2 per cent.) with 2 ounces (60 c.c.) of paraffin at the completion of an operation, while the patient is in the Trendelenburg position and still under anesthesia. The paraffin is floated up to the cecum, and remains there as an excellent lubricant and as an inhibitor of fermentation and gas formation, which aids in the easy movement of the bowels on the morning of the fourth day, and does not hinder the absorption of water in the colon. A light laxative or a simple enema is all that is necessary to promote defecation. Tympanites is almost completely eliminated, and through this storage of a large quantity of water, the renal function is doubled, vesical irritability is minimized through the increase in the amount of urine, and thirst is completely or largely abrogated. In this way the rectal drip method may practically be eliminated as a part of postoperative technic, except in cases of peritonitis. This relatively simple concluding method of replenishing an aqueous deficiency, which occurs in all operations, is most valuable in the promotion of a smooth postoperative convalescence.

While the surgeon of today stands in much less apprehension of these older fashioned contraindications, the general physician, with tragic memories of the sudden deaths that occurred when the stage of excitement was considered a normal concomitant of etherization, still lays particular stress on watching the heart and with much anxiety maintains an attitude of eternal vigilance on the pulse during the course of an operation, not infrequently to the embarrassment of a good anesthetist, whose most important function is the supervision of the cardiac function and its periodic registration on the anesthetic chart. So-called heart failure is the very last danger that the surgeon anticipates, for experience has amply taught him that this is decidedly a minimum risk; for in most cases in which there are preoperative cardiac manifestations, under the quieting effects of a well administered anesthetic, especially if it has been guarded by a preliminary hypnotic, these will fade away and an excellent heart action will supervene. The rapidly revolving wheels

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get a good grip on the track, and the anesthesia progresses without further anxiety.

For the same reason that this risk has almost dropped to nil, so, too, renal complications, when properly estimated, have ceased to cause anxiety. With the methods now available for estimating the excretory function of the kidneys, there is little excuse for postoperative renal complications. It is my purpose to treat in this sketchy fashion some of the so-called complications of older vintage, and draw the conclusion that these risks should no longer cast a pall over surgical judgment, for they are now chiefly chargeable against injudiciously chosen and unskilfully administered anesthetics rather than to the inherent dangers of the anesthetic. Fortunately, this doctrine has now been accepted widely among our hospital administrators. For the layman who once falls afoul of a badly given anesthetic, and later experiences the relative comforts of its skilled administration, realizes the vast difference between two such ordeals; for one is a horrid nightmare with a waking agony, the other a pleasant dream and a return to consciousness by a relatively easy road. Above these general experiences, the trial balance of hospital records and follow-up notes which now sit in judgment show an amazing difference in postoperative complications, in comparison with former analyses of similar cases of past years.

Experience, therefore, teaches that it is the preliminary study and adequate preparation of patients for an operation; the employment of a first class anesthetist, and the shielding of the unconscious patient from avoidable risks that are the combined factors which have reduced some of the grave contraindications of other years to the rank of lesser dangers, and have removed others from this list entirely. As many of these points have already been comprehensively considered in other papers of this symposium, I shall pass to an issue which has in former years been considered altogether too lightly, but now emerges as of capital moment. Experience has taught that the surgical novice, and all too frequently the more experienced surgeon, regards the human body as an assembled mechanism, which requires only the adjustment or repair of this or that competent organ in order to make the whole function properly, little or no regard being paid to that more or less occult psychic or nervous influence which to the best of surgeons and physicians is ill defined, and yet is of such potent value in the well adjusted recovery of a patient.

Unfortunately, we have no instrument which will give an estimate of the potency of this vital factor, as the electromotor will test the strength of a storage battery, and one is forced to fall back on much cruder methods for the calculation of this essential biologic force. Because of the lack of scientific methods of measurement, its estimation falls more within the range of the intuition of the physician or surgeon, or, perhaps better stated, must rest on his good judgment as to the vital resistance and nervous stability of the patient. A large percentage of medical and surgical cases fall more or less among the so-called neurasthenic group. Some patients have actual and definable lesions, which are provocative of their disturbed nervous equilibrium, and it is, therefore, acquired; others are the victims of apprehension while in a large proportion the mechanism for the production of vital force is congenitally deficient. The human body may be well constructed so far as any ascertainable fault in any organ is concerned, and yet under unusual stress its vital force fails, just as the power of an automobile ebbs when its batteries are rendered inefficient through use or are deficient from the start. The first battery may be repaired, but the second, until replaced by a more powerful one, will never serve except under light demand.

In this realm of physiology, a vast field of research is as yet untilled. The present era sees our profession on an extensive hunt for foci of toxic emanations, and all nervous persons are being combed from head to foot for these sources of malign influence: a veritable chase of the jack o'lantern in many instances, while in others, much good is accomplished when a real, noxious cache is unearthed. Too frequently, however, the physician in this search, like the prospector of former days, digs deeply, and joyously believes that he has located a great find, only to learn later that it is fools' gold.

In reviewing the history of gynecology, the mobile retroversion, the movable kidney, the simple lacerated cervix without erosion, etc., have served as starting points for many useless, and, therefore, harmful operations; but experience, while slow in its evolution, has greatly diminished this type of baneful specialized carpentry. One would think this a boon to womankind, and so it has been until this new toxic surge carried this same ailing class over into the dentist's and tonsillectomist's offices; indeed, this new cult is much more encompassing, for it is now bisexual, since men are now caught in the same drag-net. The day was when a surgeon was classified as a radical because he had to urge an operation on the physician; now the judicious surgeon has become a conservative and must exercise great caution in not being forced by an overly enthusiastic physician or importunate patient into an operation for the elimination of so-called toxic influences while the surgeon's experience tells him this decision is based on fallacious reasoning. Today, one encounters physicians, and occasionally a gynecologist, who are stressing the importance of the cervix as a danger area. There can be no question that the lacerated cervix with everted and hypertrophied glandular tissue which is the seat of chronic infection, causing a profuse leukorrhea, should have surgical treatment, for this is a pathologic entity which of itself requires correction, and it may actually be the source of toxic emanations capable of exercising evil effects on the body at large. Beyond this point, however, one dares not go with any degree of safety, for any operation that is not beneficial is actually more or less harmful, and this is particularly true of women who have fixed impressions that the genital sphere is the center of their ailments.

Reference is made to this danger, because I have already been consulted by numerous unmarried women suffering from nervous disturbances, ranging from a simple break in mental balance to well defined melancholia, who either have had the cervix amputated or have been advised to undergo this operation when there has not been the slightest symptomatic hint or vaguest evidence that there was any infection whatever in this area. A timely warning to the gynecologist of this danger is well worth while, but as yet I believe he has not been greatly involved in this prevailing toxic fad. An operative lust is created in many neurotic persons by surgical failures, for each operation merely sinks them deeper in the dismal mire, and yet they vainly continue to hope for a chirurgical limelight to effect their deliverance.

The grave and somber visaged Kocher once perpetrated a surgical joke which obtained widespread newspaper currency. A man who had focused his neurotic

vision on his abdominal organs had collected numerous abdominal scars in the surgical clinics of Europe. At last he drifted into Kocher's clinic, and his history depicted so classic a set of symptoms that Kocher was induced to make still a fifth incision. Nothing justifying an operation was found, and Kocher announced that he was now given an opportunity to try a novel operation for the comfort and convenience of an introspective neurotic patient. He proposed to work button holes in one edge of the incision and sew buttons on the other so that in the future a rapid peritoneal survey would be easy at any moment and the patient would no longer be put to the necessity of an expensive exploratory incision.

One of the greatest values of a follow-up system is its revelation of the fallacy of operation performed on the congenitally or chronically neurotic individual. Symptoms directly referable to a given organic lesion may be cured, but the neurotic stigmas, just as the leper's spots, are not effaced. The automobile owner may replace a poor battery with a good one and his motor is restored to its normal horse power, but no surgeon is clever enough to perform a similar feat on a neurotic patient. Too often we attempt to correct this defect in the central nervous system by tinkering with its peripheral mechanism. As the surgeon of experience observes this intensive research for toxic foci, he is likely to conclude that it is merely a variant from the old theory that gastric symptoms were often reflex manifestations of pelvic lesions, a delusion that has been dispelled by the progress of surgery in the upper abdomen. A toxic obsession may have replaced that of the reflex hunter, but out of this intensive search for the cause of many ill defined symptoms limited good will come, as it always does, with the passing of medical fads; but the violence of such a flood tide will leave many derelicts in its wake.

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ABNORMAL FUNCTION OF THE LIVER *

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Life depends on the oxidation of carbon. Carbohydrates are used as glucose, stored as glycogen in the liver, and the excess deposited in the body as fat. Unfortunately, fats cannot, to any considerable extent, be reconverted into glucose; furthermore, sufficient glucose must be available to maintain combustion of fats; otherwise the higher fatty acids will not undergo complete combustion, and acetone and diacetic acid will appear in the tissues and cause a toxemia, which in the more severe grades may terminate in coma, as in cases of diabetes.

On the contrary, proteins can, to a considerable extent, be converted into glucose, but they contain nitrogen. Under stress, as in cases of starvation or hepatic disease, sufficient glucose is not available; the protein tissues of the body are broken down for the purpose of producing the necessary glucose, and the resultant excess nitrogen must be excreted in the urine as urea and ammonia. The kidneys may be unable to excrete this excess of nitrogen, which then accumulates in the blood, for the most part as urea, and a small percentage as creatinin, producing toxemia of which uremia is a manifestation.

GLYCOGEN FUNCTION

Claude Bernard was the first to call attention to the fact that the liver is a storehouse for sugar, receiving it from food and distributing it to the tissues of the body as it is required for the production of heat and energy. Diseases of the liver that produce changes in the liver cells, thus destroying in part this ability to store and distribute glucose to the tissues, result in toxemia, of which acidosis is a type, because of the incomplete combustion of fats and the overproduction of protein waste in Nature's attempt to supply the lacking glucose. Abnormal function of the liver may occur without evidence of hepatic disease, for, if the liver is not able to supply glucose to the tissues when they have been depleted by undue muscular activity, postoperative shock or the toxemias of pregnancy, acidosis will likewise result. Levine, Gordon and Derick,[1] in a study of a group of runners participating in an American marathon race of 25 miles, showed that the condition of the runner at the finish of the race and the level of his blood sugar were closely correlated. Those who had extremely low blood sugar levels presented a picture of shock not unlike that produced by an overdose of insulin, while the winner of the race and two others who finished in excellent physical condition had comparatively normal blood sugar values.

Wilder, in preparing diabetic patients for operation, reduces the carbohydrate intake sufficiently to render the urine comparatively free from sugar. Then, to prevent postoperative acidosis, 100 gm. of carbohydrate is given each day for five days immediately prior to operation, and again after operation, injections of insulin to burn the excess glucose being used. Adams and Wilder [2] report 141 major operations with but four deaths, a practically normal mortality for comparable operations on nondiabetic patients.

In the condition of postoperative shock, in cases of starvation acidosis, and in the toxic vomiting of pregnancy, the liver does not contain sufficient glycogen to supply the necessary amount of glucose to the tissues to prevent the evil effects of hypoglycemia. We are indebted to Thalhimer,[3] and to Fisher and Snell,[4] for calling our attention to the value of intravenous injections of glucose quickly oxidized by injected insulin, in the control of postoperative shock, and to Talbot, Shaw and Moriarty,[5] for pointing out the relationship between a decrease in blood sugar and acidosis from starvation, which was immediately controlled by the intravenous injection of glucose. Further evidence of rehabilitation by means of glucose in cases of hepatic dysfunction is confirmed by the experimental work of Mann,[6] who has kept liverless dogs alive for thirty-six

* From the Division of Surgery, Mayo Clinic.
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1. Levine, S. A.; Gordon, Burgess; and Derick, C. L.: Some Changes in the Chemical Constituents of the Blood Following a Marathon Race, J. A. M. A. **82**: 1778-1779 (May 31) 1924.
2. Adams, S. F., and Wilder, R. M.: The Surgical Risk of the Diabetic Patient, S. Clin. N. Am. **4**: 587-593 (April) 1924.
3. Thalhimer, William: Insulin Treatment of Postoperative (Nondiabetic) Acidosis, J. A. M. A. **81**: 383-385 (Aug. 4) 1923.
4. Fisher, David; and Snell, Myron: Treatment of Shock with Glucose Infusions and Insulin, J. A. M. A. **83**: 1906-1908 (Dec. 13) 1924.
5. Talbot, F. B.; Shaw, E. B., and Moriarty, Margaret E.: Hypoglycemia and Acidosis, J. A. M. A. **83**: 91-93 (July 12) 1924.
6. Bollman, J. L.; Mann, F. C., and Magath, T. B.: Studies on the Physiology of the Liver, VIII, Effect of Total Removal of the Liver on the Formation of Urea, Am. J. Physiol. **69**: 371-392 (July) 1924. Mann, F. C.; Bollman, J. L., and Magath, T. B.: IX, The Formation of Bile Pigment After Total Removal of the Liver, ibid. **69**: 393-409 (July) 1924.

hours by means of intravenous injections of glucose solution, whereas if glucose is not administered, the dogs die in convulsions in six hours. Fortunately, we have in chemically pure glucose a substitute for the glycogen stored in the liver from ingested carbohydrates.

Interesting in this connection is the fact that incomplete combustion of fats may occur when there is too much alkali in the blood, as shown by Kast, Myers and Schmitz,[7] a condition called alkalosis, as well as when there is too much acid in the blood. The reaction of the blood is slightly alkaline and essentially stable, dependent for the most part on the sodium bicarbonate reserve, which is used by the body to combat excess formation of acid or its accumulation in the blood. An increase of acid in the blood produces a slight decrease in its alkalinity, diminishing the ability of the blood plasma to combine with carbon dioxid. This affords a standard for measuring the alkalinity of the blood, the normal combining power of the blood plasma having been determined to be from 56 to 65 per cent. by volume of carbon dioxid. With acidosis present, the combining power may decrease to as low as 10 per cent., while with alkalosis it may increase to 163 per cent. by volume. In a group of eleven cases of tetany the result of high intestinal stasis, studied by Brown, Eusterman, Hartman and Rowntree,[8] seven patients showed a carbon dioxid combining power of the blood plasma of more than 95 per cent. by volume.

Following the work of McCann[9] and MacCallum,[10] Haden and Orr[11] and Dixon[12] have called attention to the decrease of chlorids and increase of blood urea that accompany the alkalosis in cases of postoperative high intestinal stasis, a condition that is adequately controlled by intravenous injections of sodium chlorid and sufficient water. McVicar[13] added 10 per cent. glucose to the sodium chlorid solution, which he has given intravenously to sixty-five patients with toxemia from high intestinal stasis, with satisfactory control of the toxemia. Such chemical control of the toxemias resulting from high intestinal stasis, prior to and following operations on the stomach and duodenum for cancer and ulcer, has been of great value to Balfour,[14] who in 112 consecutive cases of gastric resection had but two deaths. More than half of these resections were for cancer, the remainder for extensive gastric ulcers and gastrojejunal ulcers.

WATER

Water is the second important therapeutic agent in the treatment of the abnormally functioning liver. Water is not only a solvent and diuretic, but its concentration in the blood is a determining factor in the regulation of body temperature, as shown by Barbour,[15] and a diminution of the fluid content of the blood means a decrease in the oxygen carrying power of the red blood cells by reason of increased viscosity. Drabkin and Edwards[16] have shown that with insulin hypoglycemia there is a lack of water in the blood, and Talbot, Shaw and Moriarty[5] found that so long as large amounts of water were ingested and excreted, few subjective symptoms occurred. When the fluid intake was diminished materially, these patients became flushed and anxious or languid and stuporous, but the symptoms disappeared when the fluid intake was increased. As a solvent and a diuretic, water is of great value in the elimination of nitrogenous material, such as urea and creatinin, which accumulates in the blood either as a result of the abnormal destruction of tissue proteins or as a result of failure of the kidneys to excrete accumulating nitrogen. Much has been written in the past about the necessity of maintaining body fluids, for surgeons have noticed that this expedited the recovery of their patients; but the explanation of the necessity of adequate fluids has been obscure.

When the liver is functioning abnormally, waste products of broken down proteins appear in the blood and, unless their elimination is assisted, the failure of the kidney to excrete them may be followed by uremic symptoms. The value of water in preventing terminal renal insufficiency is borne out in the recent work of Walters, Bollman and Kilgore,[17] on experimental duodenal fistulas in dogs. They found that dogs with duodenal and gastric fistulas died in from four to five days after the fistulas were made, and presented the anuric picture of terminal renal insufficiency. An analysis of the blood of these animals showed a progressive increase in the amount of urea in the blood. There was also a decrease in the amount of chlorids and an increase in the alkalinity of the blood. If these animals were given chlorids intravenously, small amounts of water being used as a solvent, there was no noticeable effect on the blood urea and its excretion into the urine, even though the blood chlorids were raised to normal by means of the injection, and the animals did not live longer than those that did not receive chlorids. When, besides the chlorids, from 500 to 700 c.c. of water was injected into the circulation each day, the blood urea dropped. Urine continued to form, and the dogs lived for twenty or more days, during which time there was no evidence of gross renal insufficiency.

Mann[6] has shown that urea was not formed and that there was a progressive decrease in blood sugar in dogs from which the liver had been removed. Clinically, patients with abnormally functioning livers usually have enough normal hepatic tissue to carry on the manufacture of urea, since it has been shown that 25 per cent. of the liver is adequate to maintain life. Consequently, it is to be expected that patients whose livers function abnormally may have normal amounts of urea in the blood unless, or until, the kidneys become affected as a result of toxemia, when the amount of urea in the blood will increase as the excretory ability of the kidneys diminishes.

Fats likewise are oxidized in the body to produce energy, the final products of the oxidation being carbon

7. Kast, Ludwig; Myers, V. C., and Schmitz, H. W.: Clinical Conditions of Alkalosis, J. A. M. A. **82**: 1858-1861 (June 7) 1924.

8. Brown, G. E.; Eusterman, G. B.; Hartman, H. R., and Rowntree, L. G.: Toxic Nephritis in Pyloric and Duodenal Obstruction; Renal Insufficiency Complicating Gastric Tetany, Arch. Int. Med. **32**: 425-455 (Sept.) 1923.

9. McCann, W. S.: A Study of the Carbon Dioxide Combining Power of the Blood Plasma in Experimental Tetany, J. Biol. Chem. **35**: 553-563 (Sept.) 1918.

10. MacCallum, W. G.; Lintz, Joseph; Vermilye, H. N.; Leggett, T. H., and Boas, E.: The Effect of Pyloric Obstruction in Relation to Gastric Tetany, Bull. Johns Hopkins Hosp. **31**: 1-7 (Jan.) 1920.

11. Haden, R. L., and Orr, T. G.: The Use of Sodium Chlorid in Treatment of Intestinal Obstruction, J. A. M. A. **82**: 1515-1517 (May 10) 1924.

12. Dixon, C. F.: Value of Sodium Chlorid in Treatment of Duodenal Intoxication, J. A. M. A. **82**: 1498-1502 (May 10) 1924.

13. McVicar, S. C.: A Discussion of the Clinical and Laboratory Findings in Certain Cases of Obstruction in the Upper Gastro-Intestinal Tract; Rôle of Blood Chemistry in Diagnosis, Prognosis and Treatment of This Condition, Am. J. M. Sc. **169**: 224-235 (Feb.) 1925.

14. Balfour, D. C.: The Sequelae of Gastro-Enterostomy, Ann. Surg., to be published.

15. Barbour, H. G.: Heat-Regulation Mechanism of the Body, Physiol. Rev. **1**: 295 (April) 1921.

16. Drabkin, D. L., and Edwards, D. J.: The Production of Anhydremia with Insulin, Am. J. Physiol. **70**: 273-282 (Oct.) 1924.

17. Walters, Waltman; Kilgore, A. M., and Bollman, J. L.: A Clinical and Experimental Study of Changes in the Blood Resulting from Duodenal Fistula, to be published.

dioxid and water. The fats of food are split into fatty acids and glycerin by the lipase of the pancreatic secretion, which process is accentuated in the presence of the bile salts. The epithelial cells of the intestinal tract absorb most of the fat. Thence the fat passed through the lacteals and the thoracic duct into the circulating blood, from which it is absorbed by the tissues which require it for metabolic processes, within which oxidation occurs. Interesting in this connection is the work of Roger, Binet, and Verne,[18] who found that blood taken from the left side of the heart of a dog contained 14 per cent. less fat than that from the right side, owing to the absorption of that amount of fat by the epithelial cells of the lungs. This hypothesis was substantiated by their microscopic demonstration of fat globules in epithelial cells of the lungs following the intravenous injection of an oily suspension.

A part, however, of the dissolved fat enters the blood vessels of the intestinal villi and travels by way of the portal vein through the liver to the general circulation. During the absorption of fats, it is said that fat globules may be seen in the liver cells. In dysfunction of the liver, the latter process must suffer interference when, as a result of acute disease of the liver fat may remain in the liver cells persistently (the condition of fatty infiltration), or the liver cells may be surrounded in the later stages of chronic disease by the strangling clutch of fibrous tissue cirrhosis. Further evidence of the part played by the liver in the intermediary stages of fat metabolism is illustrated by the fact that lecithin, a constituent of bile, is composed in part of fatty acid, and that the amount of microscopic fat present in the blood stream following the ingestion of a fatty meal is decreased in disease of the liver according to Brulé, whose test has been used as a method of determining hepatic function. Whether or not the body converts fat into sugar or glycogen is a question, but, according to Howell, the balance of evidence is against the conversion of fatty acids into sugar.

CHOLEMIA

The term "cholemia" is sometimes used to signify almost any untoward syndrome occurring in the course of hepatic dysfunction or disease. Rightly, cholemia means bile in the blood, and terms such as "cholemic hepatitis" or "cholemic nephritis" would better indicate the existing pathologic condition. In cases of cholemia, the components of bile that interest us most are the bile pigments and the bile acids. Thanks to van den Bergh, we are able to measure quantitatively the amount of bile pigments present in the blood stream. Rowntree [19] and McNee [20] have working methods of measuring bile acids in the blood, but it will require time to determine the accuracy of their tests. King and Stewart [21] believe that bile pigments are the toxic elements in cholemia, and they have presented numerous experiments upholding their view. On the assumption that bile pigments are rendered less toxic by calcium, they used calcium to neutralize the pigments. Lee and Vincent [22] directed our attention to the value of intravenous injections of calcium as a hemostatic in cases of experimental obstructive jaundice. Thus, during the last four years, intravenous injections of 5 c.c. of a 10 per cent. calcium chlorid solution have been a part of the routine preparation of jaundiced patients for operation, principally because intravenous calcium hastens coagulation in the jaundiced patient, prevents postoperative bleeding, as shown by Walters,[23] and has a detoxicating effect on the bile pigments. Besides an intake of from 3,000 to 4,000 c.c. of water, a carbohydrate diet and large quantities of glucose are given by mouth and by proctoclysis. Judd [24] reports 142 rehabilitated cases in which the common duct was operated on in 1924, with a mortality rate much lower than in previous years; 104 of the patients in this series were deeply jaundiced. Further, because of this rehabilitation, it was possible to operate on patients who were formerly considered beyond aid.

METHODS OF STUDYING HEPATIC FUNCTION

Failing hepatic function is not easily diagnosed. Close study of the patient with abnormal hepatic function by the clinician and the surgeon, combined with laboratory studies of the chemical concentration of bile salts, bile pigments, glucose, and the nonprotein nitrogen in the blood, will aid greatly early determinations of failing hepatic function. Moynihan [25] describes the clinical picture of hepatic insufficiency following operation on jaundiced patients as follows: "There is a paling and thinning of bile drainage with an increase in its flow. Restlessness, irritability, great fatigue with weakness on exertion and vomiting occur, while throughout, the urinary output remains proportionate with the fluid intake and the retention of urea in the blood is practically normal." McVicar [18] and Judd,[24] in studies of changes in the blood as a part of this picture of failing hepatic function, sometimes found acidosis and sometimes alkalosis. There was prompt response to the administration or replacing in the blood stream of sodium bicarbonate and glucose to control the acidosis, and of sodium chlorid and glucose to control the alkalosis, the glucose being used in both instances to supply the tissues with sugar, which was lacking because the disordered liver could not supply it.

Rowntree [19] discovered that the dye phenoltetrachlorphthalein was excreted for the most part in bile. Rosenthal's [26] test is based on the fact that the normal liver removes all but 3 per cent. of this dye from the blood stream in fifteen minutes after its intravenous injection, but if the liver is diseased, there is retention of the dye in the blood stream proportionate to the extent of the damage to the liver. When it is shown that the hepatic function is greatly reduced, and the patient's general condition is poor, a graded operation, as advised by Crile,[27] would be indicated.

Rehabilitation in cases of abnormally functioning liver has enabled us during the last year not only to perform operations more safely, but also to extend the operability to include many patients who heretofore would have been denied operation because of the grave risk entailed.

18. Roger, H.; Binet, Léon; and Verne, J.: La lipoidérèse pulmonaire, J. de physiol. et de path. gén. **21**: 461-465, 1923.
19. Rowntree, L. G.: Personal communication to the authors.
20. McNee, J. W.: Personal communication to the authors.
21. King, J. H., and Stewart, H. A.: Effect of Injection of Bile on the Circulation, J. Exper. Med. **11**: 673-685, 1909.
22. Lee, R. I., and Vincent, Beth: The Relation of Calcium to the Delayed Coagulation of Blood in Obstructive Jaundice, Arch. Int. Med. **16**: 59-66 (July) 1915.
23. Walters, Waltman: I, Preoperative Preparation of Patients with Obstructive Jaundice, Surg., Gynec. & Obst. **33**: 651-656 (Dec.) 1921; II, Preoperative Preparation of Patients with Obstructive Jaundice, Minnesota Med. **6**: 25-28 (Jan.) 1923. Walters, Waltman; and Bowler, J. P.: III, Preoperative Preparation of Patients with Obstructive Jaundice: An Experimental Study of Toxicity of Intravenous Calcium Chlorid Used in Preparation of Patients, Surg., Gynec. & Obst. **39**: 200-206 (Aug.) 1924.
24. Judd, E. S., and Burden, V. G.: Obstructive Jaundice, Am. J. M. Sc. **169**: 888-896, 1925.
25. Moynihan, Berkely: Secondary Operations upon the Biliary System, Lancet **2**: 4-7 (July 7) 1923.
26. Rosenthal, S. M.: The Phenoltetrachlorphthalein Test for Hepatic Function, J. A. M. A. **83**: 1049-1053 (Oct. 4) 1924.
27. Crile, G. W.: Biophysical Law Governing Surgical Mortality, Surg., Gynec. & Obst. **38**: 431-443 (April) 1924.

SUMMARY

The abnormally functioning liver contributes to the accumulation of toxins in the body, which are the abnormal products of fat and protein catabolism consequent on the liver's inability to supply sufficient glucose to the tissues to assist in the combustion of fats and to prevent the abnormal breaking down of body protein. Consequently, intravenous injections of 500 c.c. of a 10 per cent. chemically pure glucose solution may be indicated twice or three times a day to rehabilitate patients with abnormally functioning livers.

A sufficient quantity of water is necessary in these cases to assist in the regulation of body temperature, to assist the red blood cells in carrying oxygen to the tissues, and to assist in the excretion of nitrogenous waste material, such as urea, from the blood.

In the jaundiced patient intravenous injections of 5 c.c. of a 10 per cent. solution of calcium chlorid help primarily to hasten coagulation of the blood, to prevent postoperative bleeding, and to neutralize the toxic bile pigments.

Further experience with tests of hepatic function will be necessary to determine their surgical value in cases of abnormal hepatic function.

THE VALUE OF ORGANIZED SURGERY TO THE POOR SURGICAL RISK*

FRANK H. LAHEY, M.D.

BOSTON

The progress of surgery within the last few years has been extraordinary. It has been accomplished through the discovery and development of asepsis, antisepsis and anesthesia. These three factors made possible any operative procedure that was practicable with the persistence of human life. A virgin field was thrown open for exploration and development, and out of this development have come to us our present magnificent surgical resources.

It seems possible to us, however, that we are unjustifiably complacent over our past accomplishments and present possibilities. If we critically observe our present position in surgery, we cannot fail to be impressed with the fact that the field for development of new procedures and new methods is no longer virgin; that progress from now on for a time, unless some revolutionary principles not now apparent appear, will be slow compared with that of the last generation, and that we must for some time in the future occupy ourselves in making the best use we can of the remarkable facilities we now have at hand, not the least one of which is the organization of our surgical resources.

Organization in surgery is in process of development. It is to a large extent the logical and inevitable successor to individualistic surgery. It evidences its value and success most strikingly when applied to the poor surgical risk. It has shown and will continue to show mortality rates that are lower than those obtained by the individual working without the aid of organization, and will show this particularly in those cases in extremis which in the past were often rejected as inoperable.

By organized surgery I mean the linking together of the various components of a surgical team wherby the greatest possible degree of opportunity may be offered to the patient who is in such a state as to be deemed a hazardous risk. Such components are:

- Preoperative preparation
  - Kidneys
  - Heart
  - Liver
  - Blood
  - Diabetes

  No longer are operations withheld from the middle aged or elderly because of hypertension even with limited kidney function, or even significant kidney failure.
- Anesthetist
- Assistants
- Surgeons
- Operating nurses

PREOPERATIVE PREPARATION

Preoperative preparation may not in the strictest sense be considered under the heading "surgical team," but it is in reality a true and most important part of a surgical organization. No longer may one defend his position when operating on a poor risk patient with a low hemoglobin who has not had a blood transfusion previous to operation. It is almost criminal negligence now for a busy operating surgeon or hospital not to have an available list of grouped and tested donors. Diabetic patients cannot be operated on today without thorough preparation for the operative procedure. Possible postoperative complications must be anticipated and measures for their relief must be ready and at hand.

The necessity for preparation and seizing the best opportunities in cases in which heart, kidney and biliary tract are pathologic is so well known that it requires no repetition.

Preoperative study and preparation require no elucidation. While they are in a very large part medical, we have come to learn that the arbitrary separation of the two fields can no longer be made—that medical care, preparation and advice are essentially just as much a part of the surgical organization as are the things we now class as entirely and purely surgical. We have all learned that with the aid of one who is expert in the management of diabetic cases, it has been possible to prepare and care for even the desperate diabetic patient postoperatively so that operations at first apparently not to be considered may be undertaken and safely accomplished in a high percentage of cases with surprising smoothness. We have had it demonstrated to us in a most convincing and amazing way that toxic thyroid patients coming to the clinic in apparently hopeless stages of decompensation, when turned over to the associated cardiologists, can be so prepared that they can withstand subtotal thyroidectomy, regain their cardiac balance, and attain such cardiac ability as to insure almost normal effort and resume their usual earning and supporting capacity. It was, in fact, by attaching a cardiologist to our clinic that there was opened up for us this extremely successful and gratifying group, which we have called the thyrocardiac group.

We have had it demonstrated to us by the association of a gastro-enterologist that the old sharp demarcation in the past as to the medical treatment of gastric and duodenal ulcers was wrong. We learned that while there was some value in the more or less divergent opinions of the enthusiastic advocates of either method of treatment, the truth lay somewhere between the two extremes, and adequate appreciation and assessment of the clinical data could be obtained only when representatives of both groups were working together in an organized way, and tolerantly. We have learned that gastric and duodenal ulcers can be cured medically, and

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that when that method of treatment fails, an operation may be performed with a greater degree of satisfaction, greater security and fewer postoperative complications. We know now that not every pyloric obstruction is in need of urgent and immediate surgery; that many hour-glass contractions do not require surgery, and all are now agreed that nearly all gastric hemorrhages are best placed in the hands of the gastro-enterologist.

We have likewise learned that an organization is better fitted to keep patients "up to scratch," so to speak; that they absorb a spirit from association with other persons under the same management which promotes a closer adherence to the plan of treatment and follow-up. Without this spirit on the part of the patients, we feel that we would not have been able to make our desperate thyroid risks accept divided stage procedures and follow-up basal metabolism tests to make sure that they were remaining well. Without this spirit they would be unwilling to submit to further operations, if they were not completely relieved by the original one. We would not, without this spirit and organization, have been able to keep our stomach and duodenal patients on medical management over such periods of time as to convince ourselves of the feasibility of medical management or the need of surgery.

These are but a few of the instances illustrating the value to us of the advantage of medical association in a surgical organization.

Finally, before leaving this topic, I again wish to emphasize the fact that I am convinced that many of the apparently hopelessly divided opinions in medicine and surgery, of which there are fewer and fewer, will be fused or discarded as representatives of each group observe their results jointly. Constant close affiliation tends largely to smooth out conflicting opinions, reveals the uncertainty of both opinions, or demonstrates the obtuseness of their advocates.

ANESTHETIST

We have never considered the value of surgical organization in our clinic without being at once impressed with the value and need of the trained and experienced anesthetist who devotes his thought and interest solely to this field. Holding the views that we do regarding the place of the anesthetist, we have endeavored to assign to the anesthetist the greatest possible degree of responsibility. We believe that although the field of the administration of anesthesia has become so broad that it requires the entire time of a person to follow it and make himself conversant with the variety of methods, there are great responsibilities outside this realm of the department. We have maintained that the decision as to the type of anesthesia should be largely decided by the anesthetist, only after a conference with the surgeon who is familiar with the extent and magnitude of the contemplated operation, the necessity of entirely completing it, or the possibility of modifying it to fit the possible limitations of the method of anesthesia.

Beyond this, however, we have firm convictions that an important function of the anesthetist is to follow closely the general condition of the patient, particularly the bad risk, to assist materially in determining immediately before the patient is operated on, while on the table in the condition under which he or she must endure the procedure, whether or not a complete surgical procedure may be undertaken, or a lesser one instituted. We have today such a variety of preliminary procedures that it is often the anesthetist's function in bad risk cases to advise us as to the necessity of selecting one to apply to the person rating below the average risk. This decision we have often found to be the deciding factor as to success or failure in the bad risk case. We insist that the anesthetist observe and note on his record the degree of postoperative reaction, shock, etc., in order that he may develop a background of experience on which to draw for future decisions in advising the limitation of contemplated procedures. We insist that he acquire an approximate estimate of the time that given surgical procedures require in our hands; that he become familiar with the different stages of the operative procedures, so that he may roughly estimate the time still necessary to complete them, and that he make complete use of all methods of aid in determining the immediate condition and prophesying the probable later effect as the operation continues, such as blood pressure, pulse pressure, color, breathing, course and difficulties of the anesthesia. Further, we insist that he shall be in such contact with the patient preoperatively and postoperatively that he shall represent an individual and a personality to the patient, not a machine-like adjunct to the surgical procedure, which induces unconsciousness in the patient and then disappears from the horizon. In addition to this, he must follow closely the developments in anesthesia, assimilating gradually and cautiously those which will be of service and diminish the danger in the bad risk. He must keep accurate records as to outcome, complications and results, so that we may confirm or contradict impressions as to the best methods to employ in the doubtful cases. We have in the past too often permitted our procedures to be dictated by impressions rather than by impressions checked by actual fact, a plan, particularly in the poor risk patient, by no means justifiable.

Can the requisites stated above be obtained in an anesthetist? Yes, though not always as ideally as stated. But the more organized and the more closely associated the surgical organization, the nearer the ideal may be attained; and the nearer it is attained, the better will be the results in a large series of cases in which the poor risk patient is submitted to surgery under this arrangement.

There are today many surgeons acutely aware of the need of improvement in their anesthesia and anesthetist, and anxious to develop and employ such aids to their patients and poor risk subjects; but because of the fact that their consultants and patients are not familiar with or educated to the advantages of these measures, the surgeons are not in a position to insist on them. It is the duty, I believe, of those of us who have been so fortunate as to be permitted to develop surgical organizations to take every opportunity to demonstrate to the medical public the marked advantage and absolute need of expert anesthesia, in order that there may be a still greater application of the value of such service, and to make it easier for surgeons to develop organizations.

ASSISTANTS

As to assistants, little need be said. There are few who will deny the value of trained and experienced assistants in expeditiousness, thoroughness and life saving. An assistantship is in reality an apprenticeship in surgery, and this apprenticeship exists today in two forms: one, the house officer position, and the other, either the residence or assistantship of several years, ending in a probable association in surgery in the sur-

gical organization. The house officership is of value in that it gives a foundation of surgical training to a large number of men; but it turns them out into the world still relatively inexperienced in the actual practice of surgery.

The long term assistantship or residence endeavors to select from the first group those with the most evident surgical ability, and through longer association as assistants to impart to them greater and greater experience, surgical judgment and actual operation experience, until they are often trained surgeons of experience and judgment much earlier in life than were the surgeons of the past few years under the older method of training. This we believe to be a highly desirable arrangement, as it provides longer years of availability of the given surgeon's skill in his community, places him in surgery during his most capable years physically, and during the period when his enthusiasm and energy are at their highest pitch.

These, then, are the types of assistants that we all seek and that are of the greatest value in the poor risk cases. I do not mean to state that a large number of most excellent surgeons will not develop under the first mentioned house officer system. I do believe, however, that organized surgery with its trained teams and its slowly rotating assistants will and does show highly desirable results, particularly in the bad risk cases.

OPERATING NURSES

The situation as to operating nurses in an organized surgical team is in general respects similar to that of surgical assistants. All nurses are given operating room training, and are eventually in most instances given charge of an operating table, irrespective of the seriousness of the case, regardless of their aptitude for the work, and quite apart from whether or not they will ever again employ the knowledge. This routine assignment of nurses often seriously handicaps the surgeon occupied in attempting to operate successfully on a person who is so close to the borderline that slight surgical handicaps deflect the patient's course in an undesirable direction. This difficulty we have attempted to overcome in a manner that still maintains the surgical organization and still gives to the nurses the advantages of operating room training, by employing permanent operating table nurses and training our undergraduate nurses by having them participate under our permanent operating nurses, from whom they receive instruction. We believe that this has proved better for us and has resulted in more satisfactory experience for the nurse than may be obtained under an anxious and harassed surgeon or from a nonparticipating nurse instructor attempting to oversee two or three operations at one time. It also results in a much more satisfactory surgical organization.

COMMENT

A surgical organization is applicable to any situation in the practice of surgery, but must be necessarily modified the less centralized it becomes, and, conversely, the organization may be more closely knit, and more highly organized the more centralized it is.

We were led to centralization of surgery in the beginning by the needs of the bad risk cases coming to our clinic, and from the success and satisfaction resulting from this centralization we have been led gradually to the almost complete centralization of our surgery. The only exceptions are emergency surgery and the necessity of supplying consulting surgeons to a few suburban hospitals, which is done by the junior members of the clinic.

We realize the objections that may be brought up concerning this organization of surgery. One is that it represents group medicine.

Our view is, however, that it does not represent and is not intended to represent group medicine. It is intended solely as a group to facilitate the practice of surgery; to divide the burden of responsibility, and to make applicable to a given person a wider scope of knowledge, training and experience than is possible for one person to acquire, retain and apply. It is not intended or constructed to increase the number of patients coming to the clinic by covering numerous fields, but to attain efficiency for these patients coming to the clinic for surgical treatment. If it does indeed increase the number of patients coming to a given clinic, it does so because the patients or their physicians believe that there are desirable advantages in surgical organization, demonstrable by low mortality rate, good results and critical study. We do not mean to imply criticism or to insinuate aspersions in any way concerning the surgeon who operates today as an individual, with perhaps an assistant only as a nucleus of organization. We realize that there are trying community difficulties for the person endeavoring to organize his surgery; that early in a surgeon's career it is not possible to afford even a small organization, and that in certain communities it requires courageous enthusiam up to the point of jeopardizing one's practice to undertake organization, to refuse to operate on patients in outlying hospitals and communities, to reject the services of physicians close to the patient but undesirable from the point of view of marked efficiency, and to refuse the request to operate on patients when they may be close to their families at the expense of increased risk. There are, indeed, innumerable natural and artificial obstacles in the path of the development of surgical organization; but I am firmly convinced that it is in process of supplanting unorganized surgery; that it gives to the poor risk patient better chances of recovery; that it tends to make better surgeons earlier in life; that it produces greater progress in surgery; that it is applicable with temporary modifications to any field of surgery from that in a large and prosperous community to that in rural communities of limited financial resources; that it lends added pleasure and enthusiasm to the practice of surgery, and that it develops means, measures and methods that are of definite and distinct benefit to the so-called poor risk patient. I believe most firmly that it should and eventually must be the aim, perhaps not always completely obtainable, of all who practice surgery today, and that the value of organization in surgery will reveal its greatness most markedly in those cases termed the poor surgical risk.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. THALHIMER; JONES, MC KITTRICK AND ROOT; ORR AND HADEN; CLARK; WALTERS AND MAYO, AND LAHEY

DR. LEON T. LEWALD, New York: I would like to discuss particularly Dr. Jones' paper because the other day I had a case of diabetes referred to me for the determination of gallstones. We failed to find any evidence of gallstones but we found one of the most advanced cases of pyloric stenosis that we have ever seen. In questioning the patient as to the determining of the diagnosis of diabetes, we found it was entirely based on a high blood sugar which had been made as a routine examination. On further questioning we found that he had been told to present

himself at a time at which his stomach was supposed to be empty, namely, three hours after his breakfast, but the roentgen-ray examination showed that his stomach was never empty at any time at which he presented himself for blood sugar determination. The roentgen-ray examination over a period of several days showed that he always had at least a forty-eight hour retention in his stomach. The determination of high blood sugar, based on a supposedly fasting stomach, was inaccurate. I am wondering whether a cure of his diabetes might not be obtained by a gastro-enterostomy; in other words, whether it is not simply a case of faulty metabolism, the starvation giving a pseudodiabetes. One other point in Dr. Clark's paper was of exceptional interest to me because of some thirty thousand gastro-intestinal examinations in the New York University Hospital. At one time a young woman who had some digestive disturbance came to me. Several years later she came back because she had headaches. She had been examined by another physician who had told her that she was neurasthenic and probably had some focus of infection, such as Dr. Clark has described. She had her teeth removed and she was no better. Then he told her she would have to have an operation on the cervix. She asked me at that time whether the physician could tell that without an examination of the cervix. She declined to have any operative procedure. She was then given an intestinal examination and it was found she had an intestinal toxemia, which was relieved by a medical man.

DR. ROBERT L. DICKINSON, New York: I have visited staff reviews in forty-four hospitals to see how closely the requirements of the American College of Surgeons on "review and analysis" are really carried on. My report is printed in the recent hospital conference report of the college. There were four types found. The first type of hospital holds a "conference" on two or three interesting cases, with no presentation that bears on mortality or morbidity. When one makes such a criticism to the trustees he is told that this meets the requirements of "review and analysis." The second type is the white-washing committee. The third goes to the other extreme and is a criminal court for any one who loses a patient. The fourth is a sympathetic and critical review and analysis of every death and casualty. The surgical audit that is analogous to the financial audit is bound to come. In order to make a standardized analysis, the American College of Surgeons should be willing to take up the collection and publication of operative and post-operative statistics. This has been put up to them for years and will be put up again at the fall meeting. If the college declines, then I shall seek to have it brought up next year before the House of Delegates of the American Medical Association and ask that you undertake such a collection and publication. Then you and I will know and our trustees can tell whether our post-operative work and our morbidity are up to the standard. It is the medical man who sees the failures. Failure fails to come back to the surgeon in a considerable percentage of cases unless he has a perfect follow-up. Excessive and incompetent surgery must be curtailed. Publicity is the only cure.

DR. J. B. DE LEE, Chicago: It is a little bit surprising that in this symposium the obstetric risk was not included, and I therefore take the opportunity to supply the deficiency because in my opinion every woman who becomes pregnant becomes a risk to a certain degree; indeed, everything that has been said by the surgeons, the internists, the laboratory men, the roentgen-ray men, the gastro-enterologists applies twice to the woman who has started out on the reproduction of the species. In addition to all these elements of danger which have been already considered, there are particular and individual ills that the pregnant woman suffers which have a distinct and unfortunately a very serious bearing on her health and the health of the baby, not to say their lives. In the first place there is the nervous element, a period of nine months of expectancy more or less attended by fear and trepidation. This period is also attended by physical disturbances, such as gastric. During labor she is affected by other conditions which have a distinct bearing on every organ in the body. In the first place, she approaches labor with a degree of acidosis, which was demonstrated by Couvelaire in 1895. The time of labor is characterized by the element of pain, by the element of muscular exertion first on the part of the uterus and then on the part of the abdominal muscles and all the muscles accessory to the powers of expulsion. We know that muscular exertion persisting over a period of hours adds to the metabolic disturbances. Then, in addition to that, the heart must accommodate itself to disturbances of the statics of the abdomen, disturbances in circulation. It is no wonder that the balance of the circulation is easily upset. Increase in blood pressure is only one evidence. A sudden drop in blood pressure throws a strain on the heart and the integrity of the blood vessels. There is also a nervous imbalance. Labor might be likened to an orgasm with a gradual increase of nervous excitation and great exaltation followed by sudden relief and relaxation. The mind of the woman requires very great watchfulness to prevent nervous collapse. Hemorrhage and shock, which the surgeon has to fear, the obstetrician likewise has to fear. Prolonged labor increases this bad risk. The exhaustion, the suffering of a long labor predispose to sepsis, to shock, and both dangers are augmented by hemorrhage. It is said that pregnancy is a normal bodily function. That is very true if everything natural is considered normal. As soon as a woman conceives, she might be likened to an individual transplanted into another environment. Biologists tell us that when an individual is transplanted into another environment one of three things occurs: Either the individual adapts himself to the environment, or he moves away from it or succumbs to the hostile environment. The same thing occurs to the woman. Fortunately, however, she adapts herself to the hostile environment. Most of the troubles of the pregnant woman are due to errors in the process of adaptation to environment. These are the things that bring the subject of the obstetric risk into this symposium. The damaged heart, the damaged lung, the damaged kidney, nervous system and thyroid must be all studied by the obstetrician if he is going to carry his patient through labor successfully.

Dr. J. A. RUBEN, Pittsburgh: It is the decomposition of proteins in the obstructed intestine that makes the patient with intestinal obstruction a poor risk; the higher the obstruction, the poorer the risk. The contribution of the sodium chlorid treatment, the work of Drs. Hayden and Orr, so clearly brought before us, will undoubtedly be a great help in the handling of these cases. Yet we should not overlook that the source of the danger in this condition is the fluid in the distended intestine above the obstruction, which contains such poisonous products of protein decomposition as the amino-acids and histamin. Experimentally, when we make an isolated loop of intestine, and the food current in the intestines is restored to normal by an enterostomy, the loop becomes distended with liquid containing these chemical poisons which kill the animal. If this loop is removed a few hours before the animal would die, the animal recovers and is perfectly well afterward. This is the experimental proof of the point I want to bring out. When we are operating in a case of intestinal obstruction, if we do an enterostomy and allow this toxic fluid from the upper loop to run down into the lower loop, the chemical poisons contained in this fluid are absorbed rapidly and danger to the patient is increased. If while we are getting ready to do the enterostomy we insert a rubber tube into the distended loop and allow this toxic fluid to drain away, our mortality will be naturally reduced.

DR. J. F. GRATTAN, New York: In consideration of the question of poor risks, it occurred to me a moment ago that absolutely no consideration is ordinarily taken of the physical condition of the patient before operation. It is usually considered that the physical condition of the person operated on is perfect. I have seen some instances in our hospitals of men going into the operating room with a poor surgical risk in poor physical condition themselves. I have seen assistants driven to excessive work the day and even the night before being brought into the operating room and expected to do good work. The question of the physical condition of the nurse and the operative personnel has also occurred to me. A nurse is kept on her feet in the operating room for six or eight hours at a time with little or no relief because of the supposed efficiency of such a nurse. The question of a twelve hour shift for nurses in New York in particular has occurred to me in comparison with the fact that our police department works in shifts of eight hours. If it is considered that the police, who are generally able-bodied men, are not capable of doing good work for more than an eight hour period, why should we assume that our nurses are capable of doing good work for twelve hours?

SPINAL DRAINAGE

VALUE IN THE TREATMENT OF EARLY POLIOMYELITIS*

J. C. MONTGOMERY, M.D.
AND
W. C. C. COLE, M.D.
DETROIT

The conception of poliomyelitis as a systemic infection is rapidly becoming established. The accumulation of clinical experience forces us to view infantile paralysis as a too frequent complication of an acute infectious disease which we are, as yet, poorly prepared to recognize or control. It was our privilege to observe, during the summer and autumn of 1924, twenty-six cases of poliomyelitis, twenty of them before the complicating paralysis had occurred. It is our purpose to describe briefly: (1) the clinical findings that we found most helpful in diagnosis, and (2) the apparent effect on symptoms and outcome of early subarachnoid drainage.

IMPORTANCE OF EARLY RECOGNITION

Until relatively recent years, the diagnosis of poliomyelitis rested entirely on the occurrence of the paralytic accident, and even now recognition of the disease is too frequently dependent on this complication. This is well illustrated by the statistics of the Detroit epidemic, during which 300 cases were reported with thirty-one deaths and with 264 paralyses. Thus, in an epidemic of these proportions only thirty-six cases were reported in which the patient did not become paralyzed. Clinical and experimental studies have taught us that the paralysis is preceded by a stage of central nervous system invasion which, in turn, follows a period of systemic infection. At the present time our ability to recognize the disease is confined solely to that group of cases which progress to the meningeal stage. We have no means of identifying as poliomyelitis those cases of systemic infection which do not progress. We have observed, however, the occurrence of many cases of acute illness, consisting of fever, mild pharyngeal reddening, vomiting and prostration. We have observed that some of these go on to definite evidence of meningeal invasion, but we have observed that in the majority the patients recover without further incident. The stage of systemic infection is, in all probability, represented by these symptoms, but we have been unable to distinguish them from those occurring with upper respiratory infections at all seasons of the year. Nevertheless, the unusual frequency of this train of symptoms, during the period of the epidemic, leads us to believe that many of them at least have entertained the true etiologic agent of poliomyelitis.

In the present study we have included only those cases which have shown definite neurologic or serologic evidence, or both, of meningeal invasion with a symptomatology and course compatible with poliomyelitis.

Future progress in our knowledge of the disease must come with the development of means of recognition of the stage of systemic infection.

PRECIPITIN TESTS

Apropos of this, the work of Rosenow[1] with the precipitin test obtained from nasal washings or swabbings with a specific antistreptococcic serum is of great interest. Although Rosenow has been unable up to the present time to produce conclusive evidence of the etiologic significance of the pleomorphic streptococcus, he has brought forward convincing evidence of its frequent association with the disease. He found the precipitin test positive not only in all acute cases of poliomyelitis, but also in 59 per cent. of normal persons tested within the epidemic zone as compared to 5.5 per cent. tested outside the epidemic zone.

Precipitin tests[2] were performed on five of our patients during the acute stage and found to be positive in each instance. They were also performed on eight of our patients after the acute stage and found to be positive in five instances, the three negative tests being found on the thirty-fourth, forty-fourth and fifty-fifth days, respectively. Precipitin tests were also performed on two patients showing signs and symptoms compatible with the period of general invasion, but who did not progress to any signs whatever of meningeal irritation; these were positive in both instances. Tests were also performed on three persons who had recently been in contact with acute cases, and these were found to be positive in each instance. Precipitin tests have been performed during the past month on seven of these patients who showed positive reactions during the epidemic, and they were found negative in all cases.

CLINICAL FINDINGS

Table 1 summarizes the symptoms and clinical findings. The majority of patients were boys, there being seventeen as compared with nine girls. The average age was 4⅗ years. Vomiting was noted as the predominating initial symptom. Fever was the symptom complained of in thirteen cases. Headache was noted relatively rarely, as is to be expected from the early age of many of the patients, although at some time during the course of the disease it was present in 70 per cent. Pain was noted in only 54 percent., this again being low because of the age factor. Fever occurred in every instance, and vomiting was noted in 60 per cent. of the cases. Some redness or injection of the tonsils or pharynx was noted in practically every instance and persisted from one to two weeks after the onset of the illness. This was a matter of varying intensity; in some cases there was only a mild redness and in others a severe angina, the hyperemic area extending up into the nasopharynx, where a grayish white exudate was almost invariably seen. Hyperesthesia was noted in every instance, although it too varied considerably in its intensity. Irritability was observed in about one half the cases, although it was somewhat more constantly present in the early ones.

Of the clinical signs, aside from hyperesthesia and pharyngitis, those most constantly present were neck rigidity and resistance to anterior flexion of the spine, these signs being found in 92 per cent of all cases, or in all but two. It is indicative of the reliance which was placed on these findings that in these two instances the diagnosis was missed, lumbar puncture not being performed until the illness was several days advanced. Kernig's sign was present almost as frequently, being found in 88 per cent., or in all but three cases. The reflexes, in our experience, were most unproductive of information in early cases. They were found normal, exaggerated, sluggish and absent. The most that could

* Read before the Section on Diseases of Children at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

* Because of lack of space, this article is abbreviated in THE JOURNAL by the omission of twenty-one case reports. The complete article appears in the Transactions of the Section and in the authors' reprints.

1. Rosenow, E. C.: A Specific Precipitin Reaction in Epidemic Poliomyelitis, J. A. M. A. 84: 429 (Feb. 7) 1925.

2. Many of these precipitin tests were performed by Dr. Rosenow himself and many others under his supervision.

be learned from them was that only in rare instances were they normal, and in one or two instances a difference between the two sides was of some help in arriving at a diagnosis. Rash has seldom been described as a clinical finding in poliomyelitis. In two of our cases erythema of the face and neck was noted, and in one instance a definite punctate scarlatiniform eruption was present over the chest and back. This rash was so suggestive of scarlet fever that such a diagnosis was held probable, particularly in view of the severe angina that was present, and the absence of meningeal irritation. It was only when paralysis occurred that the true nature of the illness was recognized.

TABLE 1.—*Symptoms and Signs in Acute Poliomyelitis. All Cases*

Patient	Age	Day of First Visit	Complaint of Patient	Fever	Head-ache	Vomit-ing	Pain	Rash	Throat	Hyper-esthesia	Senso-rium	Rigidity: Neck	Rigidity: Spinal	Ker-nig	Reflexes	Paralysis
J. G.	7	1	Headache and backache	++	+	0	Back	0	Pharyngitis	+	Irritable	+	+	+	Normal	None
C. L.	7	1	Vomiting	+	±	+	0	0	Pharyngitis	+	Normal	+	+	+	Normal early, reduced late	None
C. S.	6	4-1	Vomiting	+	+	+	0	0	Pharyngitis	+	Irritable	+	+	+	Exaggerated	None
W. C.	4	1	Vomiting	+	+	+++	0	0	Pharyngitis	+	Irritable	+	+	+	Exaggerated	None
B. K.	7	3-1	Vomiting	+	+	++	0	0	Pharyngitis	+	Irritable	+	+	+	K. J. absent	None
B. G.	4½	1	Vomiting and fever	++	±	+	0	0	Pharyngitis	+	Drowsy	+	+	+	Variable	None
F. C.	6	1	Fever and pain	+	0	0	Feet and legs	0	Pharyngitis	±	Drowsy	+	±	0	K. J. absent	None
B. O.	6	1	Fever	+	0	0	Arm	0	Pharyngitis	+	Normal	+	+	+	Normal	None
V. G.	3	1	Vomiting	+	±	+++	0	0	Pharyngitis	+	Irritable	++	+	+	K. J. absent	None
M. L.	7½	4-1	Fever	++	+	0	0	0	Pharyngitis	++	Normal	+	+	+	Exaggerated	None
M. L.	5	4-1	Fever	++	+	0	Legs	0	Pharyngitis	++	Drowsy	++	+	+	Exaggerated	None
H. H.	4	4-1	Headache and pain	+	+	+	Legs	0	Pharyngitis	+	Irritable	+	±	+	Sluggish K. J.	None
O. L.	3	2	Fever and backache	+	?	0	Back	0	Pharyngitis	+	Irritable	++	++	+	Exaggerated	None
R. R.	5	5-2	Fever and vomiting	+	+	+	0	0	Pharyngitis	+	Irritable	+	+	+	K. J. absent	Temporary of palate
H. M.	1	4-2	Fever	+	?	0	0	0	Tonsillitis	?	Irritable	0	0	0	K. J. absent	Permanent of left peroneal
N. P.	4	2	Fever	+	?	+	Legs	Scarlatiniform	Severe angina	+	Irritable	0	0	0	Normal during 1st 5 days	Permanent of left peroneal and quadriceps
R. D.	3	3	Vomiting and headache	+	+	+++	0	0	Pharyngitis and penumonia	+	Apathetic	+	+	+	K. J. absent	None
C. D.	1½	3	Vomiting	+	0	+	0	0	Pharyngitis	+	Drowsy	+	+	+	K. J. absent	Permanent of right sternomastoid and facial
J. K.	7	7-3	Backache	+	++	++	Back, arms and legs	0	Pharyngitis	++	Drowsy	++	+	++	Exaggerated	None
S. H.	4	8-4	Fever	++	+	++	Legs	0	Pharyngitis	+	Irritable	+	+	+	Normal	None
J. Mc.	2½	4	Fever and headache	+	++	0	Generalized	Erythema of face and neck	Pharyngitis	++	Irritable	++	++	++	Variable	Slight permanent of both peroneals
D. J.	3½	7	Apathy and pain	+	?	0	Legs	0	Pharyngitis	++	Drowsy	+	+	+	K. J. absent	Temporary of left peroneal
E. N.	2	7	Fever and sore throat	+	+	+	0	0	Pharyngitis	++	Drowsy	+	+	+	K. J. absent	Permanent of quadriceps
M. R.	2	8	Fever	+	?	++	Legs	0	0	+	Irritable	++	++	+	K. J. absent	Permanent of quadriceps
P. C.	4	9	Weakness of legs	+	++	0	Arms and legs	Erythema of face	Pharyngitis	++	Drowsy	+	+	+	K. J. absent Left arm absent	Temporary of left facial Permanent of quadriceps
L. Mc.	10	14	Pain in legs	+	+	+	Right leg and back	0	0	++	Normal	++	++	++	K. J. absent	Slight permanent of quadriceps
9 girls) 17 boys)	4.6 yrs.		Fever....12 Vomiting.9 Headache.4 Pain.....7	100%	70%	60%	54%	11%	92%	100%		92%	92%	88%		

It will be noted under the heading "Day of First Visit" that in nine cases two days are given. It was in these instances that a definite dromedary type of onset was noted, there being a definite history of a preceding illness from two to four days previously, consisting usually of fever, coryza and occasionally sore throat and vomiting. This was followed by the apparent complete recovery of the patient, until the onset of meningeal signs, which is indicated by the second day mentioned. In Table 3, which shows the relation of spinal drainage to paralysis in our cases, we have indicated the day of first visit only in relation to the onset of meningeal signs.

SPINAL FLUID FINDINGS

It is to be noted that estimates of spinal fluid pressure were based on experience regarding rate of flow. These spinal punctures were almost without exception performed in the homes and without facilities for accurately measuring the amount of pressure. While the pressure apparently varied in its intensity, nevertheless it was definitely increased in every instance except two, and these were beyond the acute stage. Similarly, the amount of fluid was increased in every instance except one. The degree of pleocytosis varied from 10 to 800. Here it is worth noting that in some instances when puncture was performed in the extremely early stage, practically no increase was detectable. Particular attention should be called to Case 2, in which puncture was first performed on the first day of illness, there being a marked increased pressure, but only 10 cells per cubic millimeter. The patient made practically uneventful progress for eight days, when, because of the finding of a slight Kernig's sign, puncture was repeated and a pleocytosis of 150 was found. It may be stated that it was a frequent experience that the cell count was higher on the second, third and fourth days of meningeal invasion than on the first day, even in the face of definite improvement symptomatically. Indeed, this led to the conclusion that in those instances in which an extremely large amount of spinal fluid under great pressure is found, a cell count of 10 or 15 should be regarded, in a child at least, as a definite increase. It seems logical to assume that this low count at the first puncture may partially be explained on the basis of dilution.

TIME OF LUMBAR PUNCTURE AND OUTCOME

We have found it to be the opinion of many clinicians that lumbar puncture in early poliomyelitis is a most valuable procedure. Nevertheless, we have found

it regarded as a measure to be avoided by many others. While many references[3] to this procedure are to be found in the literature, there are very few observations on early poliomyelitis which have been so analyzed as to emphasize the possible benefit to be derived from subarachnoid drainage. Indeed, there is a distinct dearth of observations and descriptions of poliomyelitis in the acute stage. By far the majority of clinical papers dealing with this disease have originated from large institutions and clinics where, unfortunately, only the relatively late cases are seen; it should be the special responsibility of the pediatrician and general practitioner, who are working in the first line of trenches, to recognize and bring under careful observation the early stages of poliomyelitis.

It was our practice, as soon as a diagnosis of poliomyelitis was suspected, to perform a lumbar puncture. If this showed definite increase in pressure, with or without a pleocytosis, it was repeated at twelve or twenty-four hour intervals until the pressure had definitely subsided. This usually occurred in about three or four punctures, and it was our usual experience that after pressure had once subsided, it did not recur.

In Table 3 we have arranged the cases according to the promptness with which lumbar puncture was performed. It will be seen that in sixteen cases (those bracketed under Group 1) lumbar puncture was performed not later than the third day, and in six instances (bracketed under Group 2) lumbar puncture was first performed after the third day. The other four cases were all seen so late that it was felt best to exclude them from this analysis. The last patient, D. J., was also seen rather late; nevertheless, the type of onset was of a gradual nature, and it is probable that she was seen much earlier in the disease as reckoned from the onset of meningeal symptoms than is here indicated. This is borne out by the fact that she was not paralyzed until the day after she was first seen. It should be noted that this was the first case that came under our observation, and because of the fact that numerous pus cells were found in the urine, the tentative diagnosis was pyelitis with meningismus, and the true diagnosis was not appreciated until paralysis had occurred. It will be noted that in the cases included in Group 1, paralysis was noted in only one instance, and this consisted only of a slight weakness of the palate which was purely temporary. In the cases included in Group 2, paralysis occurred in all but one instance and was permanent in four. In the fifth some weakness is still present, with the eventual outcome still a matter of uncertainty. It is apparent that many cases such as those noted under Group 1 may have occurred and gone on to complete recovery with-

TABLE 2.—*Spinal Fluid Findings*

Name of Patient	Day of First Lumbar Puncture	No. of Drainages	Pressure	Amount	Globulin	Cells	Sugar
J. G.	1	2	+++	+	+	15	.....
C. L.	1	2	++	+	0 to +	10-150	.....
C. S.	1	3	++	+	+	70-460	.....
W. C.	1	4	++	++	+	60- 80	.....
B. K.	1	3	++	++	+	25	.....
B. G.	2	4	++	++	0	10	.....
F. C.	2	..	+	+	+	40	.....
B. O.	3	4	++	+	+	65-170	.....
V. G.	2	2	++++	+++	0	10- 15	.....
J. L.	2	4	++++	+++	+	60-510	.....
M. L.	2	3	+++	+++	+	80-140	.....
H. H.	2	3	+++	++	+	115	0.67
O. L.	2	4	+++	+	++	60-800	.....
R. R.	2	4	++	++	+	80-300	.....
H. M.	5	4	++	++	+	240	.....
N. P.	5	4	++	++	+	160	.....
R. D.	3	6	+	+	+	385-440	0.967
C. D.	4	..	++	++	+	250	.....
J. K.	3	4	++++	++	+	150	0.714
S. H.	5	1	+++	++	+	220	.....
J. Mc.	4	6	+++	++	—	110	0.744
D. J.	10	3	++	++	..	50	.....
E. N.	7	4	++	++	+	16	0.722
M. R.	9	1	Normal or slight +	+	+	30	0.741
P. C.	9	5	++	++	..	35-110	.....
L. Mc.	14	3	Normal	Normal	++++	.....	.....

TABLE 3.—*Relation of Spinal Drainage to Paralysis in Poliomyelitis*

	Patient	Age in Years	Day of First Visit	Day of First Drainage	Number of Drainages	Maximum Pleocytosis	Paralysis: Day	Paralysis: Location	Paralysis: Outcome	Rosenow Serum
Group 1	J. G.	7	1	1	2	15	0	.....	.....	15 c.c. concentrated
	C. L.	7	1	1	2	150	0	.....	.....	.....
	C. S.	6	1	1	3	460	0	.....	.....	.....
	W. C.	4	1	1	4	80	0	.....	.....	.....
	B. K.	7	1	1	3	25	0	.....	.....	.....
	B. G.	4½	1	2	4	10	0	.....	.....	.....
	F. C.	6	1	2	2	40	0	.....	.....	.....
	V. G.	1½	1	2	2	15	0	.....	.....	.....
	J. L.	7½	1	2	4	510	0	.....	.....	.....
	M. L.	5	1	2	3	140	0	.....	.....	.....
	H. H.	4	1	2	3	115	0	.....	.....	.....
	O. L.	3	2	2	4	800	0	.....	.....	.....
	R. R.	5	2	2	4	300	5	Palate	Recovery	.....
	R. D.	3	3	3	2	440	0	.....	.....	13 c.c. concentrated, 27 c.c. unconcentrated
	J. K.	7	3	3	4	150	0	.....	.....	.....
	B. O.	6	1	3	4	170	0	.....	.....	.....
Group 2	J. McN.	2½	4	4	6	110	4	Peroneal	Slight permanent	.....
	C. D.	1½	4	4	4	250	4	Right sternomastoid and right facial	Permanent	.....
	S. H.	4	4	5	1	230	0	.....	.....	.....
	N. P.	4	2	5	4	160	5	Left peroneal and quadriceps	Permanent	.....
	H. M.	1	1	5	4	240	3	Left peroneal	Permanent	.....
	D. J.	3½	7	10	3	50	8	Left peroneal	(Recovery ?)	.....
	Average Group 1					213.7				
	Average Group 2					173.3				
	E. N.	2	7	7	4	16	4	Quadriceps	Permanent	30 c.c. unconcentrated
	P. C.	4	9	9	5	110	6-7	Left facial, all quadriceps	Recovery	.....
	M. R.	2	8	9	1	30	4-5	Quadriceps	Permanent	.....
	L. McD.	10	14	14	3	Bloody	6	Right and left quadriceps	Improved	.....

3. Meninger, K. A.: The Treatment of Poliomyelitis, J. Kansas M. Soc. **23**: 278 (Oct.) 1923. A Monograph on the Epidemic of Poliomyelitis in New York City in 1916, New York, Department of Health, 1917, p. 254. Hauser, G. H.: Diagnostic and Therapeutic Value of Lumbar Puncture in Lethargic Encephalitis, New Orleans M. & S. J. **74**: 331 (Nov.) 1921.

out recognition, and it is entirely conceivable that they would have done so without lumbar puncture; nevertheless, in the three cases in which we failed to make an early diagnosis (N. P., H. M. and D. J.), and in which lumbar puncture was not performed until late in the illness, paralysis did occur. It is of interest to note that practically the same average maximum cell count obtained in the two groups, in the first group the average being 213.7 and in the second group 173.3.

Entirely aside from the possible relationship of the spinal drainage to outcome, marked improvement in symptoms was invariably noted, there being without exception a cessation of vomiting and a diminution of hyperesthesia, neck rigidity and spinal rigidity. Even in the four late cases noted at the bottom of Table 3, in which paralysis had occurred, a marked improvement in the symptoms was noted at once after lumbar puncture.

CONCLUSIONS

The data that we have gathered strongly suggest a possible beneficial effect on the outcome of the disease to be derived from early and repeated subarachnoid drainage. We are making this report in the hope of stimulating further observations on a larger scale. The evidence of beneficial effect is sufficiently suggestive to necessitate the controlling of this factor in any studies of clinical poliomyelitis that attempt to evaluate a therapeutic procedure of which lumbar puncture is a part.

REPORT OF CASES

CASE 2.—C. L., a boy, aged 7 years, seen, Sept. 4, 1924, had become ill that day with fever and vomiting. His past history was essentially negative. Examination showed slight redness of the pharynx, rigidity of the neck and spine and a slightly positive Kernig's sign. Lumbar puncture was performed immediately and showed a marked increase in pressure, with 10 cells per cubic millimeter and a negative globulin test. The following day the patient seemed completely recovered. The rigidity had disappeared, and it was felt that the case was not one of poliomyelitis. However, it was felt wise to visit him again; September 8, he was seen by us and again entirely normal findings were recorded. September 10, he was found to be entirely normal except for a slight rigidity of the neck. However, Kernig's sign was negative. There was no rigidity of the spine and no fever. September 12, however, the rigidity of the neck was quite marked, and there was a slightly positive Kernig's sign. Lumbar puncture was performed on this day showing again an increase in pressure, but to a much less degree than previously, with a large volume and 150 cells per cubic millimeter and a positive globulin test. Following this spinal drainage the signs of meningeal irritation again entirely disappeared, and the patient went on to uneventful recovery without paralysis.

CASE 3.—R. R., a boy, aged 5 years, seen, Aug. 1, 1924, had a fever and had vomited July 26, according to his mother's statement. The illness was diagnosed by the family physician as a gastro-intestinal upset. The patient was apparently well the next day and remained so until July 31, when he again began to vomit and developed fever. When seen by us the following day he showed marked irritability, slight rigidity of the neck and spine, a slightly positive Kernig's sign, absent knee kicks and a moderate pharyngeal injection. Lumbar puncture was performed, showing a large volume of fluid under greatly increased pressure, with a cell count of 30 per cubic millimeter and a positive globulin test. The white blood count showed 8,800 leukocytes per cubic millimeter, with 65 per cent. polymorphonuclears, 5 per cent. mononuclears and transitionals and 30 per cent. lymphocytes. Lumbar puncture was repeated, August 2, showing again a definitely increased pressure and a large volume with 130 cells per cubic millimeter. August 3, lumbar puncture showed an increase of pressure, but less marked than the previous day, with 110 cells per cubic millimeter. August 4, the spinal fluid was under practically normal pressure with 300 cells per cubic millimeter. It was noted at this time that the patient had a slightly nasal voice. Inspection of the palate showed that it moved well, but the nasal voice persisted for about two weeks. The patient's hyperesthesia and irritability cleared after the last lumbar puncture, and he went on to an uneventful recovery without paralysis.

CASE 5.—C. S., a boy, aged 6 years, seen, Sept. 11, 1924, whose past history was essentially negative, had had fever four days before and was slightly indisposed for one evening, according to his mother. The next day he was normal, however, and remained so until the day of our visit, when he began to vomit, complained of headache and developed fever. Examination showed a slight rigidity of the neck and a slightly positive Kernig's sign. The knee kicks were slightly exaggerated, and there was a moderate redness of the pharynx. Otherwise the physical findings were negative. Lumbar puncture was performed, and a large amount of fluid under great pressure was obtained, with 70 cells per cubic millimeter and a positive globulin test. Lumbar puncture was repeated on the following day. Again spinal fluid was obtained under increased pressure, although to a less degree than previously, and again 70 cells per cubic millimeter were found. Following this the patient showed a marked improvement in symptoms, there being less rigidity and no vomiting. Spinal puncture was done again, September 15, at which time the fluid was found under practically normal pressure, with 460 cells per cubic millimeter. Fever continued until this time, but following this puncture the patient's temperature dropped to normal and remained so. Rigidity of the neck, while clearly diminished, was present to a slight degree until September 20, when physical examination showed perfectly normal findings except for slightly sluggish knee kicks, which, however, were found to be normal again, September 22. The patient made an uneventful recovery without paralysis.

CASE 17.—D. J., a girl, aged 3½ years, seen, July 28, 1924, had complained of fever and irritability one week before. Fever had been present at intervals since, and recently the patient had become drowsy and was sleeping most of the time. Hyperesthesia had been marked. She had been unable to walk for the past two days. Examination showed slight rigidity of the neck, a positive Kernig's sign and the throat very slightly inflamed. The knee jerks were absent. July 29, the condition was practically the same. There was no fever. Examination of the urine showed large quantities of pus. A diagnosis of pyelitis was made. July 31, the patient complained of increased pain in the lower extremities and was unable to stand. The reflexes were absent, and the hyperesthesia was marked. Spinal puncture was performed which showed a marked increase of spinal fluid with a cell count of 50 and a positive globulin. August 2, there was very little change in the patient's condition. The spinal puncture was repeated, still under marked pressure. The next day the patient was greatly improved. The reflexes were more active and the hyperesthesia was practically gone. August 6, the patient was improving rapidly. Movements had returned to all parts, but there was a weakness of the left leg. August 9, the patient had returned to normal health and was able to walk in a normal manner, but had a slight dragging of the left foot and a slight atrophy of the left calf muscles. She was referred to an orthopedist and several months later still showed a slight atrophy and weakness of the left peroneal group. This was the first case observed, and the diagnosis was not made promptly because we were not thinking of poliomyelitis and because of the associated pyelitis.

CASE 26.—D. L., a boy, aged 3 years, seen, Sept. 10, 1924, became ill the day previous, was irritable, awoke frequently during the night and seemed feverish. The past history was essentially negative. Examination showed marked rigidity of the neck and spine, exaggerated reflexes and a reddening of the pharynx. Lumbar puncture was performed immediately, showing a large quantity of fluid under greatly increased pressure, with 360 cells per cubic millimeter and a positive globulin test. Puncture was repeated the following day, and a large quantity of fluid was again found under increased

pressure, but no cell count was made. September 12, however, puncture was again performed, and a large quantity of fluid was obtained under increased pressure. The fluid was opalescent, and 800 cells per cubic millimeter were found. On the following day the fluid was quite clear with 60 cells per cubic millimeter and obtained under normal pressure. Following the lumbar punctures the patient's signs and symptoms entirely disappeared, and he went on to an uneventful recovery without paralysis.

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TREATMENT OF GENERAL SEPTICEMIA BY GENTIAN VIOLET AND MERCUROCHROME-220 SOLUBLE

EXPERIMENTAL RESULTS AND CLINICAL OBSERVATIONS *

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General septicemia has an extremely variable clinical course which frequently ends in spontaneous cure. This makes it easy to overestimate the value of any method of treatment. To guard against this danger in the present study, we shall begin by enumerating certain facts about the natural course of the disease.

1. The entry of bacteria into the blood stream is a relatively frequent occurrence and in most cases is not attended by consequences of a serious character, at least not so far as immediate danger to life is concerned.

Numerous clinical and experimental observations support the truth of this proposition. Ritchey [1] obtained positive blood cultures from patients with chills following instrumentation of the urinary tract. It is a matter of common knowledge how frequently positive blood cultures are obtained from patients with various ailments, provided enough blood is drawn.

2. A patient with general septicemia will nearly always recover, even if very sick, provided his focus of infection is removed by drainage or amputation and provided he is not suffering from some debilitating disease.

Bloodgood has written at length on this subject. The senior author has reported a series of thirteen cases of general septicemia, all arising from infections of the extremities and all with the diagnosis confirmed by blood culture. Amputation and ordinary nursing care were the sole treatments used. There was but one death in the series, and this was of a patient with diabetes. Insulin would have prevented this sole fatality. The healthy human body can cope successfully with a severe bacteremia, provided fresh doses of bacteria are not constantly added to the blood stream.

3. A healthy patient, with a general septicemia from a focus of infection which cannot be removed by drainage or amputation, will frequently recover, provided he survives the first few days of the infection.

The clinical course of patients with postpartum sepsis furnishes the best proof of this proposition. We have observed rather a large number of these patients treated entirely by conservative methods. Though most of these women were very ill for weeks, some with pulmonary infarcts and some with inflammatory masses palpable through the abdominal wall, recovery was the rule. One patient, on admission to the hospital, had been sick for five weeks. She had been having from one to three violent chills daily. Her hemoglobin was under 20 per cent. She was in a stupor and had almost complete suppression of urine. She was given several large transfusions of blood, and made a complete recovery. The lesson to be drawn from this case, for those who are enthusiastic about any special treatment, is obvious. If the primary dose of bacteria is not overwhelming, nature may gradually wall off, isolate and destroy the focus of infection and sterilize the blood stream.

4. General septicemia is a terminal event in many cases of pneumonia and peritonitis. In such cases, the development of the blood stream infection is an indication that the fundamental infection is overwhelming. Under these conditions, it will obviously be impossible to sterilize the blood stream, and it is understandable that any treatment whatever is futile.

5. In case an infection is of long duration, the body acquires an immunity to the infecting organism, and the latter acquires an immunity to the defensive powers of the host. This is Welch's law of reciprocal immunity. It explains the remarkable chronicity of certain infections. These are the conditions that may be benefited by any therapy that excites a systemic reaction.

Bearing in mind the foregoing facts about the natural course of general septicemia, we can now consider, with the proper amount of scientific skepticism, the alleged curative effects of gentian violet and mercurochrome-220 soluble. The intravenous use of these drugs in infectious conditions has excited much scientific interest and enthusiasm. Such interest is entirely warranted. A review of the literature, however, discloses many conclusions that cannot be supported by known facts.

Strictly speaking, any agent known at the present time with the power to devitalize one form of protoplasm will, in sufficient concentration, devitalize others. Any drug, therefore, of greater bactericidal power will of necessity show some toxicity for tissue cells. Yet the phenomenon of selective toxicity, though ultimately quantitative, is in many instances so striking as to appear qualitative in its selection. This phenomenon is demonstrated in the selective toxicity of gentian violet for gram-positive bacteria.

Churchman,[2] in 1912, demonstrated that 90 per cent. of gram-positive organisms are unable to grow on mediums containing gentian violet, whereas gram-negative organisms grow luxuriantly on the same mediums. By animal inoculations of guinea-pigs and rabbits with *Staphylococcus aureus* previously exposed to the dye, he proved that these organisms are killed by a dilution of 1:1,000,000 gentian violet. Staphylococci, of such virulence as to kill control animals in forty-eight hours, were rendered harmless by staining with the dye, two rabbits surviving enormous doses of these stained bacteria.

In marked contrast, gram-negative bacteria remain alive in dilutions of 1:10,000, and retain their growth properties even though deeply stained. Later, Churchman [3] demonstrated strains of gram-negative bacilli to which the dye is toxic, and isolated from a pure culture of *B. coli* a "strain within a strain" to which the dye was bactericidal. At this time, he pointed out another important factor; namely, that a film of dead bacteria protects adjacent living organisms from the dye.

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* From the Department of Surgical Pathology, Indiana University School of Medicine, the Eli Lilly Research Fellowship.

1. Ritchey, J. O.: Unpublished work.

2. Churchman, J. W.: The Selective Bactericidal Action of Gentian Violet, J. Exper. Med. **16**: 221-247 (Aug.) 1912.

3. Churchman, J. W.: Further Studies on the Behavior of Bacteria Toward Gentian Violet, J. Exper. Med. **33**: 569-581 (May) 1921.

The essential fact remains that gram-negative organisms survive exposure to gentian violet and other triphenylmethane dyes in strengths far in excess of that required to kill gram-positive organisms. Furthermore, the comparative nontoxicity for tissue cells has been demonstrated by Russell [4] in that frog's endothelium will grow on mediums containing gentian violet in concentration of 1 : 20,000 and even 1 : 2,000, a strength more than sufficient to kill gram-positive organisms.

In 1913, Churchman [5] demonstrated further that gentian violet may be injected in large quantities into the blood stream of rabbits, the animals remaining alive and apparently uninjured with tissues stained blue. The blood of such an animal possesses an increased power to inhibit the growth of bacteria. This action, however, is demonstrable in the circulating blood for only a short time after the injection. At the end of one and three fourths hours, it has disappeared entirely. This disappearance of activity is not due to chemical reaction with the blood. The dye mixed with blood in vitro is unchanged in its bacteriostatic action after standing as long as one week. It would appear that the injected dye is physiologically removed from the blood stream in a short while. Churchman points out that concentrations of gentian violet too small to possess bactericidal power yet possess ability to inhibit bacterial growth. This he designates as "bacteriostatic action."

As a result of its selective bactericidal and bacteriostatic action, together with its nonirritating qualities, the dye has proved of great value as a local antiseptic. Infected joints,[6] empyema cavities,[7] open wounds [8] and many other suppurative conditions have thus been effectively treated by Churchman and numerous others. The bactericidal powers of gentian solutions are greatly enhanced by elevating the temperature [9] a few degrees. Concerning its intravenous use, however, Churchman,[10] in 1924 stated: "I have never been able to kill organisms circulating in the blood stream by intravascular injections of gentian violet. There is some evidence in the literature that it may at some time be possible to produce a sterilisans magna in this way, but certainly at the present time there is nothing to suggest that it is now possible to do for bacteria what quinine does for malaria."

Mercurochrome is a dye preparation of an entirely different type. It is a powerful germicide for all types of bacteria, first evolved by Young [11] and his associates in 1919. Under the name of mercurochrome-220 soluble, it first came into prominence as a genito-urinary antiseptic. In a dilution of 1 : 1,000 it kills *B. coli* and *Staphylococcus aureus* in urine in one minute. Its slight irritability to the tissues is demonstrated by the fact that the human bladder will tolerate a 1 per cent. solution for from one to three hours without harm. Also by the intravenous route, rabbits withstand safely an injection of 5 mg. per kilogram of body weight; dogs withstand 10 mg. per kilogram, the latter dose being fatal to the rabbit.

When normal rabbits are injected intravenously with safe doses the urine [12] exhibits an increased bacteriostatic action on *B. coli*. This action is greatest about two hours following injection.

Hill and Colston [13] further demonstrated that, when normal rabbits are injected intravenously with doses varying from 1 to 7.5 mg. per kilogram, the blood has an increased bacteriostatic action. Such blood inhibits the growth of *B. coli* to a much more marked degree than does the blood from uninjected rabbits. This action is greatest from fifteen to forty-five minutes after injection, rapidly disappearing thereafter.

In 1922, Piper [14] reported the favorable effect of mercurochrome intravenously in puerperal sepsis. In conjunction therewith, he reported animal experiments to the effect that a normal rabbit had been given repeated injections of 5 mg. per kilogram without apparent injury. A virulent strain of streptococcus caused the death of a control rabbit in thirty-six hours. Another rabbit receiving an intravenous inoculation from a subculture was comatose in twenty-four hours, the blood culture being positive. Following an intravenous injection of mercurochrome, 5 mg. per kilogram, the rabbit was improved, though the blood culture remained positive. Following a second injection of the same dose, all blood cultures were negative. The rabbit was reported cured but was killed shortly thereafter. Other rabbit experiments with the same culture of streptococcus failed because the organism had lost its virulence. It is a well known fact, experimentally, that the virulence of streptococcus for rabbits is very uncertain.

This review of the experimental data on mercurochrome and gentian violet discloses evidence that these drugs should have therapeutic value in blood stream infections. The laboratory results, however, are in no case sufficiently definite to explain the startling cures reported by clinical observers. It is for this reason that our experimental work is being reported at this time. By inducing staphylococcic septicemia in the rabbit, we have approximated the conditions in which the clinician undertakes the intravenous use of gentian violet and mercurochrome. Furthermore, because of its constant fatality in the rabbit, the treatment of this infection constitutes a crucial test of the drugs.

TOXICITY OF GENTIAN VIOLET

Though the toxicity of gentian violet and the safe dose for intravenous injection into rabbits were fairly well known, a short series of experiments was conducted in order to discover, if possible, the least toxic type of solution.

A. It was possible to prepare 1 : 1,000 solutions of gentian violet in 0.9 per cent. sodium chlorid, but the dye is not sufficiently soluble in physiologic sodium chlorid solution to permit solutions of greater concentration. These solutions had the theoretical advantage

4. Russell, D. G.: The Effect of Gentian Violet on Protozoa and on Tissues Growing in Vitro, with Especial Reference to the Nucleus, J. Exper. Med. **20**: 545-553 (Dec.) 1914.

5. Churchman, J. W., and Herz, L. F.: The Toxicity of Gentian Violet and Its Fate in the Animal Body, J. Exper. Med. **18**: 579-583 (Nov.) 1913.

6. Churchman, J. W.: Treatment of Acute Infections of the Joint by Lavage and Direct Medication, J. A. M. A. **70**: 1047-1051 (April 13) 1918.

7. Waters, B. H.: Pleural Infections Complicating Artificial Pneumothorax Treated with Gentian Violet, Am. Rev. Tuberc. **4**: 875 (Feb.) 1921.

8. Churchman, J. W.: Selective Bacteriostasis in the Treatment of Infections with Gentian Violet, J. A. M. A. **74**: 145-148 (Jan. 17) 1920.

9. Churchman, J. W.: The Effect of Slight Increase of Temperature on the Bactericidal Power of Gentian Violet, Bull. Johns Hopkins Hosp. **33**: 227-229 (June) 1922.

10. Churchman, J. W.: The Selective Bacteriostatic Action of Gentian Violet and Other Dyes, J. of Urol. **11**: 1-18 (Jan.) 1924.

11. Young, H. H.; White, E. C., and Swartz, E. O.: A New Germicide for Use in the Genito-Urinary Tract: Mercurochrome-220 Soluble, J. A. M. A. **73**: 1483-1491 (Nov. 15) 1919.

12. Hill, J. H., and Colston, J. A. C.: A Note on the Bacteriostatic Action of Urine After the Intravenous Administration of Mercurochrome to Normal Rabbits, Bull. Johns Hopkins Hosp. **34**: 220 (July) 1923.

13. Hill, J. H., and Colston, J. A. C.: A Note on the Effect of the Intravenous Administration of Mercurochrome on the Bacteriostatic Action of Blood, Bull. Johns Hopkins Hosp. **34**: 372 (Nov.) 1923.

14. Piper, E. B.: The Treatment of Puerperal Sepsis by the Use of Mercurochrome Intravenously, with a Report of Animal Experimentation in the Chemical Disinfection of the Blood, Am. J. Obst. & Gynec. **4**: 532-543 (Nov.) 1922.

of isotonicity, and results indicate that they are less toxic per milligram of the dye than solutions of other types. The salt, however, tends to cause a progressive crystallization of the dye and for that reason makes an undesirable solution.

B. Aqueous solutions are the most commonly used, 1:500 and 1:200 concentrations. Our experiments would indicate, however, that intravenous injection in this form is more toxic than in the more dilute solution in physiologic sodium chlorid solution.

C. Isotonic solutions of gentian violet, 1:500, in 4 per cent. glucose seemed to possess a slight advantage over aqueous solutions of the same concentration.

GENTIAN VIOLET, 1:1,000, IN PHYSIOLOGIC SODIUM CHLORID SOLUTION

Three rabbits receiving 5 mg. per kilogram lived.
One rabbit receiving 10 mg. per kilogram lived.
One rabbit receiving 15 mg. per kilogram lived.
One rabbit receiving four injections, each 5 mg. per kilogram, at seventy-two hour intervals, lived.

GENTIAN VIOLET, 1:500 AQUEOUS SOLUTION

One rabbit receiving 5 mg. per kilogram lived.
One rabbit receiving 15 mg. per kilogram died in twelve hours.
One rabbit receiving 20 mg. per kilogram died in five hours.
One rabbit receiving 50 mg. per kilogram died at once.

GENTIAN VIOLET, 1:500, IN 4 PER CENT. GLUCOSE SOLUTION

One rabbit receiving 5 mg. per kilogram lived.
One rabbit receiving 10 mg. per kilogram died in four days.
One rabbit receiving 15 mg. per kilogram died in two days.
One rabbit receiving 20 mg. per kilogram died in nine days.

From the tabulated results it appears that all rabbits survived injections of 5 mg. per kilogram of body weight. In one case, 5 mg. injections repeated four times at seventy-two hour intervals caused a loss of 300 gm. weight, but the animal appeared normal. A solution of the dye, 1:1,000, in physiologic sodium chlorid solution appears less toxic, two rabbits surviving injections of 10 and 15 mg. per kilogram, whereas other solutions were fatal in that concentration.

Two dogs under light ether anesthesia, with respiration and blood pressure recording on a drum, were given large injections of the dye. One dog, receiving a slow injection of 50 mg. per kilogram, died in forty-five minutes, of respiratory paralysis. The blood pressure rose during the injection and remained high till respirations had ceased. Caffein had no effect on the respiratory failure. The other dog, given two injections of 10 mg. per kilogram at half hour intervals, died in the same manner at the end of two hours. All the tissues were stained a deep blue, the gray matter of the brain showing a marked discoloration. No discoloration of the spinal fluid or urine was demonstrated. In the case of a rabbit dying five hours after a large injection, the urine, however, was a decided blue.

Necropsy on a rabbit that died nine days after an injection of 20 mg. per kilogram showed: (1) marked degenerative changes in the kidneys; (2) atrophy of the liver and spleen with deep pigmentation; (3) fibrosis of heart muscle, and (4) chronic pulmonary congestion.

It appears that the mechanism of death in a rapidly fatal dose of gentian violet is respiratory paralysis. The pathologic process leading to a delayed death from the drug is that of toxic degeneration of parenchymatous organs.

EXPERIMENTS IN SEPTICEMIA

In these experiments with septicemia in the rabbit, *Staphylococcus aureus* was chosen because of its well known constant virulence to the animal. A pure culture of *Staphylococcus aureus* was obtained from a carbuncle, and subcultures of this organism were used throughout our first series, its virulence showing no marked attenuation after many days in the laboratory.

Cultures were grown on routine agar slants and were suspended in salt solution for injection. All inoculations were made into a marginal ear vein. All injections of the dye were made in a similar manner.

Rabbits 1 and 2 were given similar injections of *Staphylococcus aureus*.

Rabbit 1 died in fifty hours.
1. This rabbit, an untreated control, became rapidly ill.
2. Blood cultures were strongly positive, showing a hemolytic staphylococcus.
3. The rabbit died in fifty hours. The necropsy showed nothing but the acute congestion of general septicemia.

Rabbit 2 died in 120 hours.
1. Twenty-four hours following inoculation, the blood culture was positive.
2. The rabbit was then given gentian violet intravenously, 5 mg. per kilogram (1:1,000 solution in physiologic sodium chlorid solution).
3. The rabbit improved. Blood culture taken six hours later was negative.
4. Forty-eight hours later, the blood culture was again positive. The rabbit was given a second injection of gentian violet, 5 mg. per kilogram.
5. The second dose caused little or no improvement. The rabbit died five days after the inoculation.
6. Necropsy showed acute inflammation of parenchymatous organs and small collections of pus in the joints.

Rabbits 3 and 4 received the same dose of staphylococcus.

Rabbit 3 died in thirty-six hours.
1. This rabbit was untreated as a control.
2. The blood culture was positive in twenty-four hours, and the rabbit died in thirty-six hours.

Rabbit 4 died in ninety hours.
1. Eighteen hours following inoculation, the blood culture was positive.
2. The rabbit was then given gentian violet, 5 mg. per kilogram (1:1,000 solution in physiologic sodium chlorid solution).
3. There was temporary improvement, but the animal died in ninety hours.

Rabbits 5, 6 and 7 received the same dose of an attenuated culture of staphylococcus.

Rabbit 5 died in forty-three hours.
1. The blood culture was positive, but the animal was not seriously ill.
2. Twenty hours after inoculation, the rabbit received gentian violet, 10 mg. per kilogram (1:500 solution in 4 per cent. glucose solution).
3. The animal died forty-three hours from the time of inoculation. Necropsy showed acute congestion of the lungs and hemorrhages in the kidneys. In this case it is evident that death was precipitated by the treatment.

Rabbit 6 died in 192 hours.
1. Twelve hours following inoculation, the rabbit received gentian violet, 5 mg. per kilogram (1:1,000 solution in physiologic sodium chlorid solution).
2. Forty-eight hours later, the rabbit received another injection of gentian violet, 5 mg. per kilogram (1:500 aqueous solution).
3. The rabbit lived for eight days, during which time it developed a marked arthritis. Necropsy showed large abscesses and collections of pus in the joints.

Rabbit 7 died in 312 hours.
1. This animal was untreated as a control for Rabbits 5 and 6 for a period of ten days. Though it outlived the two treated rabbits, it developed the characteristic arthritis. On the tenth day it was comatose and very near death.

2. The rabbit was then given a series of five injections of gentian violet, 3 mg. per kilogram (1:1,000 solution in physiologic sodium chlorid solution).
3. The rabbit showed marked temporary improvement, but died at the end of thirteen days from the time of inoculation.

Rabbits 8 and 9 received the same dose of staphylococcus.

Rabbit 8 died in 240 hours.
1. This animal, an untreated control, lived ten days.
2. Necropsy showed ulcerative endocarditis, purulent pneumonia, abscesses in the kidneys, purulent arthritis, and abscesses in the muscles.

Rabbit 9 died in 120 hours.
1. At the end of twenty-six hours this rabbit received gentian violet, 5 mg. per kilogram (1:500 solution in 4 per cent. glucose).
2. The animal died in five days with pyemia and purulent arthritis, whereas the untreated control lived ten days.

Rabbits 10, 11, 12 and 13 received the same dose of staphylococcus from a culture of great virulence.

Rabbit 10 died in twenty-two hours.
1. This animal, untreated as a control, died twenty-two hours following inoculation.

Rabbit 11 died in twelve hours.
1. Two hours after inoculation, this rabbit was given gentian violet, 10 mg. per kilogram (1:500 aqueous solution).
2. The animal died in twelve hours.

Rabbit 12 died in eighty hours.
1. Twelve hours after inoculation, the rabbit received gentian violet, 3 mg. per kilogram, and at short intervals five more doses of the same size.
2. The animal was improved temporarily after each injection, but died after eighty hours.

Rabbit 13 died in thirty hours.
1. Twenty-four hours after inoculation, the rabbit was comatose. It received gentian violet, 3 mg. per kilogram and two hours later another injection of the same size.
2. The rabbit died in thirty hours from the time of inoculation.

Rabbits 14, 15, 16 and 17 received the same dose of staphylococcus.

Rabbit 14 died in eighteen hours.
1. This rabbit was untreated as a control, and died in eighteen hours from the time of inoculation.

Rabbit 15 died in forty-five hours.
1. Fifteen minutes from the time of inoculation, this rabbit received gentian violet, 7.5 mg. per kilogram (1:1,000 solution in physiologic sodium chlorid solution), and twenty-four hours later another injection of the same size.
2. The rabbit died in forty-five hours from the time of inoculation.

Rabbit 16 died in forty hours.
1. Three hours after inoculation this animal received gentian violet, 5 mg. per kilogram (1:500 aqueous solution), and twenty-four hours later a second injection of the same size.
2. The animal died in forty hours from the time of inoculation.

Rabbit 17 died in ninety-six hours.
1. One hour after inoculation the rabbit received gentian violet, 5 mg. per kilogram (1:1,000 solution in physiologic sodium chlorid solution).
2. The same dose was repeated three times at twenty-four hour intervals.
3. With each injection there was temporary improvement, but the rabbit died in ninety-six hours from the time of inoculation.

In this series of seventeen rabbits, staphylococcus septicemia induced by inoculation into the ear vein was fatal in all cases. There is a noticeable variation in the rapidity with which individual animals succumbed to the infection. This may be attributed to differences in the virulence of the infection, to variation in individual susceptibility, and to the effect of treatment. In most cases, gentian violet used intravenously brought about a temporary improvement, and in those instances in which a blood culture was taken a short time after injection, it was found to be temporarily negative. In one case, a dose of 10 mg. per kilogram injected two hours after inoculation precipitated death in twelve hours. In other instances, also, control animals survived those treated. The average life of the five controls was seventy-two hours after inoculation, whereas twelve treated rabbits averaged 100 hours. Careful scrutiny of the data will demonstrate that, barring individual variations, the dye has exerted a temporary bacteriostatic action. Yet in no case were we able to sterilize the blood stream, and in that blunt analysis the results are negative.

Following this series, the work was discontinued for a time. One or two attempts were made to treat staphylococcic septicemia in rabbits, with mercurochrome. Results were chiefly negative and were quite comparable to those discussed above. The idea was then suggested that both gentian violet and mercurochrome might be given in safe doses, thereby securing a reinforced bacteriostatic action and at the same time avoiding the toxic effect of either drug in a large dose.

In the experiments that follow, the drugs were injected in 1:200 aqueous solution. Three rabbits were given the same dose of an attenuated culture of *Staphylococcus aureus*.

Rabbit 18 died in twenty-one days.
This rabbit was untreated as a control and lived three weeks, finally dying with abscess formation in all parts of the body and the characteristic collections of pus in the joints.

Rabbit 19 lived.
This rabbit received gentian violet, 5 mg. per kilogram, thirty minutes following inoculation, and one hour later an injection of mercurochrome, 5 mg. per kilogram.

Rabbit 20 lived.
This rabbit received mercurochrome, 5 mg. per kilogram, thirty minutes following inoculation, and one hour later the same dose of gentian violet.

The last two rabbits developed symptoms of a mild arthritis, but recovered and remained alive throughout the three months during which they were observed. In these two animals, the development of the arthritis and the recovery of a small amount of staphylococcic pus from one of the joints assure us that even here a therapia sterilisans magna was not effected. The infection, however, was so effectively reduced that the animals recovered; and in view of the remarkable fatality which staphylococcic septicemia displays for the rabbit, we regard this as a positive therapeutic result.

In an attempt to repeat these results, seven more rabbits were injected with the same dose of staphylococcus. Rabbit 21 was allowed to go untreated as a control. Rabbits 22 and 23 received mercurochrome, 5 mg. per kilogram, one hour after inoculation. Rabbits 24 and 25, one hour after inoculation, received mercurochrome, 5 mg. per kilogram, and at the end of another hour the same dose of gentian violet. Rabbits 26 and 27 received the same treatment, the drugs being injected in the reverse order. All these rabbits died within ten days, the control outliving the treated animals.

Following the disappointing results of this series, we attempted to determine the effect of intravenous medication immediately following inoculation. Fifteen rabbits were given the same dose of staphylococcus.

There were three controls inoculated and untreated:

Rabbit 28 died in ten days.
Rabbit 29 died in five days.

Rabbit 30 died in seven days.
The average life of the controls was 7.3 days.

Three rabbits received gentian violet, 5 mg. per kilogram, immediately following inoculation:

Rabbit 31 died in fifteen days.
Rabbit 32 died in seven days.
Rabbit 33 died in seven days.
The average life of these rabbits was 9.6 days.

Three rabbits received mercurochrome, 5 mg. per kilogram, immediately following inoculation:

Rabbit 34 died in thirty-one days.
Rabbit 35 died in twelve days.
Rabbit 36 died in two days.
The average life of these rabbits was fifteen days.

Three rabbits received gentian violet, 5 mg. per kilogram, immediately and mercurochrome, 5 mg. per kilogram, in one hour:

Rabbit 37 died in three days.
Rabbit 38 died in three days.
Rabbit 39 died in four days.
The average life of these rabbits was 3.3 days.

Three rabbits received mercurochrome, 5 mg. per kilogram, immediately and gentian violet, 5 mg. per kilogram, in one hour.

Rabbit 40 died in seven days.
Rabbit 41 died in two days.
Rabbit 42 died in thirty-five days.
The average life of these rabbits was 14.6 days.

COMMENT

Throughout these experiments, there are seen wide variations in the individual susceptibility of the animals and in their reaction to treatment. In some instances it appears obvious that the medication has hastened the death, apparently by overloading the blood stream with toxic products. Staphylococcic septicemia, as we have employed it, has proved to be an infection of constant fatality to the rabbit. Though the organism has been caused to exhibit considerable variation in virulence, no untreated animal has survived the infection. Gentian violet and mercurochrome, however, have usually exerted a temporary restraining influence on the progress of the disease, and in the case of two rabbits, the combined use of both drugs enabled the animals to survive an infection which killed their control in three weeks.

Our inability to secure repeated cures in subsequent experiments makes the work inconclusive, but the explanation is manifest. The temporary improvement, shown where the medication was wisely administered, is due to the fact that these drugs actually do exert a bacteriostatic action in the blood stream. Blood cultures from treated animals were found negative for short periods. The reappearance of the organism in the blood later is proof that this bacteriostatic power is not sufficiently great to accomplish a therapia sterilisans magna. Bacteria in the tissue spaces and in poorly vascularized areas, such as joints, are not killed. These organisms remain to grow and reinfect the blood stream. We regard the two cures as fortuitous events wherein the infection was so obtunded that the animals were able to survive.

CLINICAL APPLICATIONS

Bearing in mind the introductory facts enumerated in regard to general septicemia, and considering these in the light of our experimental results, we may now proceed to a consideration of the clinical application of gentian violet and mercurochrome intravenously. It is not our purpose to report a large series of cases. The literature of recent months abounds with case reports of septicemia from various causes treated by intravenous injection of these two drugs. Many startling cures have been claimed. Young and his associates[15] have been most enthusiastic. Piper,[16] Hirst, Mooser and Monroe,[17] Shallenberger,[18] Major,[19] Hopkins,[20] Adams,[21] Whitman[22] and numerous others have reported cases representing conditions of erysipelas,[23] streptococcus pneumonia, streptococcus septicemia, colon bacillus septicemia, staphylococcus septicemia, pyelonephritis, perinephric abscess,[24] chronic gonorrhea, puerperal sepsis, phlebitis, subacute endocarditis and a few other conditions. The general trend of opinion in those who have reported cases treated by gentian violet and mercurochrome intravenously is that, at times, startling results may be obtained; but there are failures almost equally numerous. The cases reported in the literature and in the opinions of the writers will total about 40 per cent. definitely improved, 20 per cent. possibly improved, and 40 per cent. unimproved.

We have used these drugs in a number of cases with results comparable to those reported. Our technic for injection into patients has been very simple. Gentian violet we have employed in 1:200 solution made up in sterile distilled water. This solution contains 5 mg. of the dye in each cubic centimeter, and a full dose of 5 mg. per kilogram requires rather a large injection (45 c.c. for a patient weighing 100 pounds, or 45 kg.). More concentrated solutions, however, have a marked tendency to cause thrombosis of the vein at the site of injection. Though this complication is not serious, it is troublesome and should be avoided. The tendency is lessened in the more dilute solutions. We have in most cases used a preliminary injection of 2 mg. per kilogram of body weight, following later with a larger dose as indicated. With mercurochrome, we have employed the same technic. This drug, however, does not cause thrombosis, and a 1 per cent. solution may be used with advantage. In one or two patients receiving mercurochrome, 5 mg. per kilogram, we have noted diarrhea, ptyalism and other evidences of mild mercurial poisoning. Other than that, we have observed no serious untoward results from the injection of either drug. There is, however, much evidence in the literature that mercurochrome is by no means an innocuous drug, and indiscriminate administration is to be discouraged.

Following the intravenous injection of either mercurochrome or gentian violet, there is apt to be a sharp temperature reaction, sometimes a chill. Following this, in favorable cases, the temperature falls rapidly and the improvement is marked. We have observed five or six

15. Young, H. H., and Hill, Justina H.: The Treatment of Septicemia and Local Infections by Intravenous Injections of Mercurochrome-220 Soluble and of Gentian Violet, J. A. M. A. **82**: 669-675 (March 1) 1924.
16. Piper, E. B.: Blood Stream Infection Treated with Mercurochrome-220 Intravenously, Am. J. Obst. & Gynec. **9**: 17-21 (Jan.) 1925.
17. Mooser, H., and Monroe, P. W.: The Intravascular Use of Gentian Violet, M. J. & Rec. **119**: 58-60 (Jan.) 1924.
18. Shallenberger, W. F.: Gentian Violet Solution Intravenously in the Treatment of Phlebitis, Surg., Gynec. & Obst. **39**: 291 (Sept.) 1924.
19. Major, R. H.: Recovery from Subacute Infective Endocarditis Following Gentian Violet Therapy, J. A. M. A. **84**: 278 (Jan. 24) 1925.
20. Hopkins, F. S.: Intravenous Use of Mercurochrome, Boston M. & S. J. **191**: 733 (Oct. 16) 1924.
21. Adams, D. S.: Mercurochrome-220 Soluble Intravenously, Boston M. & S. J. **191**: 981 (Nov. 20) 1924.
22. Whitman, W. A.: Mercurochrome-220 Soluble Intravenously in Chronic Gonorrhea and Complications, J. A. M. A. **82**: 1914 (June 14) 1924.
23. Young, H. H., and Birkhaug, Konrade: The Cure of Scarlet Fever Complicated with Erysipelas and Streptococcus Septicemia by Intravenous Injection of Mercurochrome-220 Soluble, J. A. M. A. **83**: 492-494 (Aug. 16) 1924.
24. Young, H. H.: Cure of a Retroperitoneal and Perinephric Infection (Abscess) by the Intravenous Injection of Mercurochrome, Bull. Johns Hopkins Hosp. **35**: 14 (Jan.) 1924.

cases so treated in which the recovery appeared miraculous; but appreciating the extremely variable course which septicemias display, we hesitate to place too much confidence in uncontrolled clinical observations concerning the effect of a specialized treatment.

From this standpoint the following case is instructive:

A girl, aged 10, entered the hospital in a much debilitated state from a condition which resembled Banti's disease. Shortly after admission, she developed a severe cervical adenitis, which rapidly spread, involving the whole face and neck in a diffuse cellulitis. The child became critically ill with chills, high fever and marked prostration. The blood culture contained a streptococcus. She developed a metastatic abscess involving the middle finger and entire palm of the left hand. At this time, she lay in a stuporous delirium, and the opinion of all consultants was that she would most certainly die. The intravenous use of both mercurochrome and gentian violet was considered, but neither was employed. The abscess of the finger and palm was drained, and the girl was given hydrotherapy and other routine treatment. Within twenty-four hours, the improvement was miraculous, and her subsequent recovery from the infection was uneventful.

Had either of the drugs in question been employed, the result would have been the same, and we should have had another startling cure credited to intravenous therapy. In marked contrast to this is the case of a man with gangrenous cellulitis involving the neck and anterior chest wall, treated by means of extensive surgical drainage and the intravenous injection of both mercurochrome and gentian violet:

Three days before admission, a robust, healthy man developed an adenitis and a swelling of the left side of the jaw, apparently secondary to trouble with a tooth, which had been sore for some time. This rapidly extended until at the time of admission the entire anterior surface of the neck was the seat of a boardlike induration and an enormous edema, which extended down the anterior chest wall to the sixth costal cartilage. The breathing was stertorous and the voice was a husky whisper, but the man had been able to walk into the hospital. In the operating room two hours later, the tissues of the involved area were found to be gangrenous and literally putrid. The area was given drainage through numerous incisions. Cultures and smears revealed, in addition to a streptococcus, the vibrion septique of malignant edema. The hopeless nature of the condition was recognized, but the man rallied from the surgical procedure so splendidly that we worked with him night and day in an attempt to save his life. The wounds were given free irrigation with hydrogen peroxid alternating with surgical solution of chlorinated soda (Dakin's solution) and hypertonic salt solution. On account of his inability to swallow, the fluid intake and nutrition were maintained by means of the stomach tube.

Six hours after admission, the patient was given intravenously 2 mg. of gentian violet per kilogram of body weight. Slight improvement was noted, and for twenty-four hours his condition seemed remarkably good. Forty hours from the time of admission, he was given mercurochrome, 5 mg. per kilogram, and two hours later gentian violet in the same dose. This vigorous therapy had no effect on his progressively downward course. Nine hours later, the patient died. It is interesting to note that blood cultures drawn two hours following the last injection of gentian violet were positive for the streptococcus.

These two cases are of interest, not because they lead us to any momentous conclusions. They do, however, assure us that an appreciation of the actual underlying condition forms the only safe basis of a prognosis. Without this understanding, we may easily be misled in matters of therapy. It is certainly not our purpose, however, to deny the value of mercurochrome and gentian violet. It is entirely evident that these substances, which hold bacteria in check even though they do not kill them, may have real therapeutic value. It seems logical to assume that they may hold an infection in abeyance, giving the natural forces of resistance added opportunity to marshal themselves against the invasion. There will always be instances wherein the pathologic processes involved become incompatible with life, and in such cases all therapeutic measures fail. In contrast to these are the numerous disease processes that display a gratifying tendency toward recovery.

In the treatment of these conditions, mercurochrome and gentian violet may be considered as valuable adjuncts, but in any event, recoveries from septicemia with other treatments may be just as startling.

CONCLUSIONS

1. Gentian violet and mercurochrome, when injected in safe doses into the blood stream of rabbits with staphylococcic septicemia, do not accomplish a therapia sterilisans magna.
2. A large dose of either drug injected in the presence of an overwhelming infection may hasten death.
3. Either drug, when properly employed, will exert a temporary bacteriostatic action in the blood stream. The ultimate benefit to be derived from this retardation of the infection depends on the resistive powers of the animal.
4. These observations may be applied directly to the clinical use of gentian violet and mercurochrome intravenously. On this basis, a more rational conception of the therapeutic possibilities may be maintained.

THE RESISTANCE OF NORMAL HUMAN ERYTHROCYTES TO HYPOTONIC SALINE SOLUTIONS *

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This report is made for the purpose of calling attention to the extremely wide variations in the normal resistance of red blood cells to hypotonic saline solutions. These variations are more striking when the fragility of the erythrocytes is tested quantitatively, according to Simmel's technic.[1]

Briefly, the method is as follows: The standard Simmel's fluid contains 8.2 gm. of sodium chlorid, 0.2 gm. of potassium chlorid, 0.2 gm. of magnesium chlorid, 0.2 gm. of calcium chlorid, 0.2 gm. of sodium acid phosphate and 0.05 gm. of sodium bicarbonate in 1 liter of water. This solution is isotonic with whole blood, is buffered to approximately the same degree as whole blood, has the same p_H, and the salts are in approximately the same proportions as in whole blood. This standard fluid is diluted with water to 70, 60, 50 and 40 per cent., respectively. A red blood cell count is made in the customary manner, Hayem's solution being used. Then, in other red cell pipets, blood drawn from finger or ear pricks is diluted 1:200 with the four hypotonic Simmel's fluids, noted above. The pipets are well shaken, and are then allowed to stand for one hour at room temperature, after which they are again

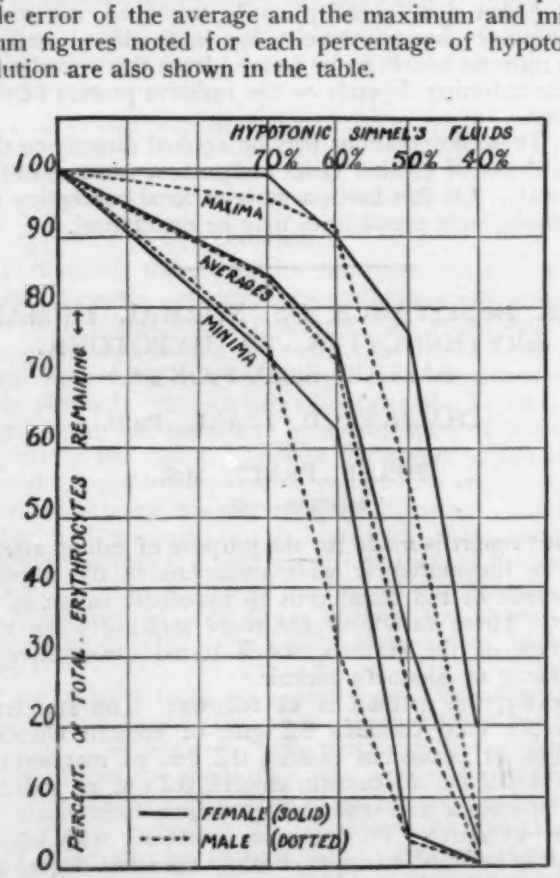
* From the Department of Pharmacology, University of Wisconsin Medical School.

* A more extended report, giving all figures, including some for clinical cases, will be published elsewhere.

1. Simmel, H.: Die osmotische Resistanz der Erythrocyten, Deutsch. Arch. f. klin. Med. 142: 252 (June) 1923.

well shaken, and the actual number of red blood cells remaining in each of the four hypotonic fluids is estimated in the usual way by means of a red cell counting chamber. The figures obtained are then reduced to percentages of the total normal erythrocyte count, obtained at the beginning with Hayem's solution. This method has the great advantage of quantitative accuracy with small amounts of blood.

Simmel [1] gave results on only three normal persons. In order to obtain a more accurate idea of the normal resistance picture to these hypotonic saline solutions, determinations as outlined above were made on twenty-five normal men and twenty-five normal women, ranging in age from 20 to 39, and engaged in active mental and physical work. The general results are shown in the table. The average male red cell count was 5,150,000 per cubic millimeter, whereas the average female red cell count was 4,600,000. About 85 per cent. of the red cells remained in the 70 per cent. Simmel's fluid for both men and women. In the more dilute Simmel's fluids, the average number of red cells remaining was slightly higher for the females than for the males. The probable error of the average and the maximum and minimum figures noted for each percentage of hypotonic solution are also shown in the table.



Variations in the resistance of normal human erythrocytes to hypotonic saline solutions. The maximum and minimum observations together with the averages are shown for a series of twenty-five normal men and twenty-five normal women.

As will be noted, there is a very wide variation between the maximum and minimum figures serving as an index to the resistance of normal human erythrocytes to hypotonic saline solutions. The variation is shown graphically in the chart. The value of these figures is due chiefly to the fact that they have been derived from a comparatively large number of normal human subjects in the prime of life. In the same normal person, considerable variation may be noted if determinations are made from day to day. Duplicate determinations agree within a range roughly indicated by the probable error of the average for the four different hypotonic solutions.

When the resistance of erythrocytes to hypotonic saline solutions is studied in clinical cases, the findings can scarcely be considered abnormal unless they are beyond the extremes reported here. The red blood cells of women seem to be slightly more resistant to hypotonic saline solutions than those of men. The periodic loss of blood that the human female suffers may be a factor concerned here.

Resistance of Normal Human Erythrocytes to Hypotonic Saline Solutions, as Determined by Simmel's Method

	Total Red Blood Corpuscles Hayem's Solution	Percentage of Total Red Cells Remaining in Simmel's Fluid			
		70%	60%	50%	40%
Average 25 men	5,150,000	84.8 ± 1.2	73.0 ± 2.7	25.0 ± 3.5	1.6 ± 0.2
Maximum	5,680,000	96	92	55	4.7
Minimum	4,820,000	74	31	4	0.3
Average 25 women	4,600,000	85.4 ± 1.5	75.6 ± 1.6	33.2 ± 5.2	2.8 ± 0.8
Maximum	4,940,000	99	90	77	20
Minimum	4,290,000	73	63	5	0.4

SUMMARY

Quantitative determinations of the resistance of erythrocytes to hypotonic solutions by Simmel's method show that an extremely wide variation exists for normal subjects. The red blood cells of women on the average seem normally to be slightly more resistant to hypotonic saline solutions than those of men.

Clinical Notes, Suggestions, and New Instruments

THE TREATMENT OF THRUSH WITH GENTIAN VIOLET*

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SAN FRANCISCO

Although in the majority of instances thrush yields, in from four to ten days, to simple cleansing with mild alkaline washes or weak solutions of formaldehyd, it is occasionally very intractable and even dangerous. While usually a minor disease, it is readily transmissible and constitutes one of the major contagious problems in hospital wards for very young infants. For a long time the need has been felt of a local antiseptic which would be prompter and more reliable both as a curative and, in the presence of epidemics, as a preventive agent than those in general use. For such purposes the dyes recently introduced into clinical therapeutics by Young and his associates appeared to us to deserve a trial.

In several instances in which we used mercurochrome-220 soluble (from 1 to 2 per cent. aqueous solutions) definite improvement occurred but not with striking rapidity, and moreover we feared that repeated applications of a soluble mercurial compound to the mouths of very young infants might produce intestinal or other disturbance.

In a recent epidemic of thrush affecting fifteen infants, we used local applications of 1 per cent. aqueous solution of gentian violet, without supplementary washes or other treatment. Smears for the fungus were positive in the twelve cases in which they were made. The gentian violet solution was painted on tongue, gums, hard palate and cheeks, not oftener than once a day, excepting in one case. Treatments

* From the Division of Pediatrics, Stanford University Medical School.

were given half-way between feedings, which in our nursery are at intervals of four hours. In four cases, only one application was given; in five cases, two applications; in five cases, three applications, and in one case, nine applications. The last case was that of a feeble premature infant with a particularly heavy infection, who received two applications daily.

One patient was dismissed before the effects of treatment could be observed. Of the fourteen remaining, seven, or 50 per cent., showed an apparent cure (complete disappearance of visible lesions) in one day or less; five, or 36 per cent., in from two to three days; two, or 14 per cent., in from four to five days. In three instances, the lesions returned after intervals of four, five and nine days, respectively, and in each instance again disappeared after one application of gentian violet. In the last of these cases the patient was treated at irregular intervals in the outpatient clinic, and the lesions again reappeared at later intervals of four and three days, each time disappearing after one treatment. In all instances in which patients were under close daily observation, the lesions after one treatment either disappeared within a day or became very much smaller and less extensive, and progressively diminished until they entirely disappeared. The only untoward effect observed was moderate regurgitation of food noted once in one case following treatment. This may have been a coincidence, since it was not repeated.

Toward the end of the ward epidemic we gave prophylactic treatments to nine uninfected infants, none of whom acquired thrush. These were the last to be exposed directly to infected infants, and no further cases of the disease occurred.

While the effects of treatment with gentian violet were strikingly uniform in this series of fifteen cases, we feel justified, in the absence of careful controls, merely in presenting our data and recommending the dye for further trial and study as a local antiseptic in the treatment of thrush and as a prophylactic against this infection in the presence of an epidemic. Relapses, after discontinuance of treatment, are occasionally to be expected.

A CASE OF BACILLARY DYSENTERY CONTRACTED IN THE LABORATORY *

LEON S. LIPPINCOTT, M.D., VICKSBURG, MISS.

This case is reported because of the possibility of accidental infection during the carrying out of diagnostic laboratory procedures and because of the favorable outcome under the treatment used.

June 21, a technician working in the laboratories of the Vicksburg Sanitarium, while performing an agglutination test for the identification of a recently isolated culture of dysentery bacilli, accidentally drew into her mouth through a pipet some of the broth culture. She immediately washed her mouth with alcohol, 95 per cent, and then reported the accident. Chlorin water was prescribed in teaspoonful doses every three hours; magnesium sulphate, saturated aqueous solution, two teaspoonfuls every two hours; and a diet to contain no uncooked foods. The chlorin water was continued three days, and the salts until 1 ounce had been taken. An autogenous vaccine was prepared from the culture being tested, and administration begun, June 24.

The culture proved to be a dysentery bacillus of the Flexner type, both to agglutination tests and to sugar reactions.

Diarrhea began, June 27, with three or four movements, semifluid in consistency and containing much mucus. No macroscopic blood was found, but a few red cells were found microscopically and chemical tests were positive. A culture planted, June 28, showed dysentery bacilli of the Flexner type. The chlorin water was again given every three hours and the vaccine continued at four day intervals. The diarrhea lasted three days, being improved on the second day and much improved the third day. Thereafter, there was no diarrhea.

Cultures of specimens of feces, July 8 and again July 17, proved negative for dysentery bacilli.

* From the Laboratories of the Vicksburg Sanitarium.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

IODIPIN 40 PER CENT.—Iodized Sesame Oil 40 Per Cent.-Merck.—An iodine addition product of sesame oil containing from 39 to 41 per cent. of iodine in organic combination.

Actions and Uses.—Iodipin 40 per cent., on account of its high molecular weight, is used as a contrast medium in myelography and pyelography, for detecting urethral strictures and in the spinal column for the location of tumors.

Dosage.—From 1 to 5 Cc. (15 to 75 minims).

Marketed by Merck & Co., New York, by license of the Chemical Foundation, Inc., under U. S. patent 774,224 (issued November, 8, 1904; expired) and U. S. trademark 32,003.

Ampules Iodipin 40 Per Cent. 1 Cc.
Ampules Iodipin 40 Per Cent. 2 Cc.

Iodipin 40 per cent. is an oily liquid, insoluble in water, having an oleaginous taste. Its color is brown to black, depending on the thickness of the layer that is examined. Specific gravity at 15 C., from 1.370 to 1.372.

Boil 0.5 Cc. of iodipin 40 per cent. and 10 Cc. of alcoholic solution of potassium hydroxide (1: 10), in a porcelain dish for about five minutes, evaporate the liquid on a water bath and ignite the residue. Dissolve the residue in 10 Cc. of water, filter the solution, add 5 Cc. of hydrochloric acid to the filtrate, then add chloroform and a few drops of chlorine water and agitate: the chloroform solution is violet. Dissolve 1 Cc. of iodipin 40 per cent. in 10 Cc. of chloroform, add a few drops of phenolphthalein solution and 0.3 Cc. (1 drop) of tenth-normal sodium hydroxide: the liquid becomes red (*limit of acidity*). Mix 10 Cc. of iodipin 40 per cent. with 50 Cc. of petroleum benzin: a transparent liquid results.

Transfer into an Erlenmeyer flask about 0.5 Gm. of iodipin 40 per cent., weighed accurately; add 15 Cc. of alcoholic solution of potassium hydroxide (potassium hydroxide, 3 Gm., in alcohol, sp. gr. 0.858 to 0.873, 15 Cc.) and boil the mixture for five minutes under a reflux condenser. Evaporate the liquid in a porcelain dish on a water bath and ignite the residue carefully. Dissolve the residue in water, transfer it to a 100 Cc. measuring flask, dilute to exactly 100 Cc. and filter (part of the filtrate is used for "a" and part for "b"). (*a*) To 20 Cc. of the filtrate add 3 Cc. of hydrochloric acid (sp. gr. 1.126 to 1.127) and 50 Cc. of freshly prepared chlorine water, boil the mixture until the excess of free chlorine is expelled, cool the solution, add an excess of potassium iodide and titrate the liberated iodine with tenth-normal sodium thiosulphate solution: the weight of iodine found corresponds to not less than 39 per cent. nor more than 41 per cent. (*b*) To 50 Cc. of the filtrate add 10 Cc. of nitric acid (sp. gr. 1.150 to 1.152) and 10 Cc. of tenth-normal silver nitrate solution, agitate thoroughly and determine the excess of silver nitrate by titration with tenth-normal ammonium thiocyanate solution, using ferric ammonium sulphate as indicator: the amount of iodine found by this method agrees with that found by method (*a*) (*limit of chlorine or bromine*).

PERTUSSIS BACILLUS VACCINE (See New and Nonofficial Remedies, 1925, p. 353).

H. K. Mulford Co., Philadelphia.

Pertussis Bacterin-Mulford (see New and Nonofficial Remedies, 1925, p. 354).—Also marketed in packages of one 5 Cc. vial (M174-9) containing 2,000 million killed pertussis bacilli per cubic centimeter; of one 20 Cc. vial (M174-4) containing 2,000 million killed pertussis bacilli per cubic centimeter; and of four vials (M174-00) containing, respectively, 250, 500, 1,000 and 2,000 million killed pertussis bacilli.

SENSITIZED BACTERIAL VACCINES (See New and Nonofficial Remedies, 1925, p. 367).

H. K. Mulford Co., Philadelphia.

Typho-Serobacterin (Sensitized Typhoid Vaccine)-Mulford (see New and Nonofficial Remedies, 1925, p. 368).—Also marketed in packages of three syringes (M136-10) containing, respectively, 1,000, 2,000 and 2,000 million killed sensitized typhoid bacilli; of three 1 Cc. vials (M136-50) containing, respectively, 1,000, 2,000 and 2,000 million killed sensitized typhoid bacilli; and of thirty 1 Cc. vials (M136-10) (hospital size), being ten sets of three doses containing, respectively, 1,000, 2,000 and 2,000 million killed sensitized typhoid bacilli.

Typho-Serobacterin-Mulford, Mixed (Sensitized Triple Vaccine TAB) (see New and Nonofficial Remedies, 1925, p. 369).—Also marketed in packages of three hypo-units (M138-79) containing in dose one, 1,000 million killed sensitized typhoid bacilli and 500 million each of killed sensitized paratyphoid bacilli A and B, and in doses two and three, respectively, twice the number of bacilli in the first dose; of thirty 1 Cc. vials (M138-5) (hospital size), being ten sets of three doses, the first containing 1,000 million killed sensitized typhoid bacilli, and 500 million each of killed sensitized paratyphoid bacilli A and B, the second and third containing, respectively, twice the number of bacilli in the first dose.

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SATURDAY, SEPTEMBER 19, 1925

CANCER-LIKE CHANGES IN TISSUE CULTURES OF MAMMARY GLAND

The physiology of the mammary gland has been the subject of much unsatisfactory experimentation. In order to study the influences of internal secretion on its structure and function, Alexander Maximow of the department of anatomy at the University of Chicago made tissue cultures of the mammary gland of the rabbit in different mediums.[1] In cultures in rabbit blood plasma and extract of rabbit bone marrow, appearances developed that resembled carcinoma closely. These appearances might vary in different cultures even of the same series, but in the most pronounced cases the microscopic picture of carcinoma was produced so perfectly that without knowledge of the source of the tissue a pathologist might be justified in concluding that it concerned carcinoma of the breast. It should be borne in mind that in this series of experiments the medium consisted of a mixture of the blood plasma of young rabbits and extract of marrow of grown rabbits, the extract from pregnant rabbits being apparently especially active. The point is that nothing foreign to the species was introduced into the cultures. The growth of cells that led to the appearance of carcinoma started in various places of the explant at the cut ends of the gland ducts—in other words, the growth was polycentric. A fundamental change in the duct cells must have taken place, because the cells not only multiplied but also enlarged and infiltrated the interstitial connective tissue, no matter whether this was alive or dead, and there formed epithelial masses or nests as well as the so-called pearls of squamous cell carcinomas.

In discussing the possible factors in this remarkable growth in the tissue cultures, Maximow mentions first the influence of the mere cutting out of the piece of tissue from its normal surroundings, suggesting that the traumatism might act as a stimulant to the epithelium at the ends of the ducts. As the second factor he emphasizes the chemical effect that substances in the extract of the bone marrow may have, and says that whatever the effect may be, it does not concern substances that are foreign to the animal in question. In the third place, he points out that there is reason to believe that the functional state of the gland at the time of explantation and that peculiarities of the individual animal may be of importance in ways that cannot be specified definitely at the present time. The question whether the infiltrating epithelial cells in the cultures become changed irreversibly into genuine cancer cells can be solved only by inoculation of suitable cultures into living rabbits. Simply to continue the tissue growth in cultures outside the body would not establish whether the cells have acquired permanent malignant properties or not. Reimplantation of carcinomatoid tissue cultures would solve this question only in case the result is positive; that is to say, results in carcinoma of the inoculated animal. If no growth results, the issue would not be settled because it is established that inoculation of spontaneous tumors in the same species does not always give positive results. In the event of a positive outcome of inoculation with cancerous cultures, it may become possible to determine whether microbes of any kind take part in the process, not to mention the study of other problems that immediately suggest themselves, such as the influence of various agents on the cancer cells.

The further work by Maximow with his tissue cultures will be followed with lively interest because of the bearing the phenomenon he describes in such cultures may have on the cause of cancer. Is it possible that means have been found whereby epithelial cells can be made to take on malignant properties under relatively simple and controllable experimental conditions?

1. Maximow, Alexander: Ueber krebsähnliche Verwandlung der Milchdrüse in Gewebskulturen, Virchows Arch. f. path. Anat. **256**: 813-845, 1925.

WHAT CONSTITUTES A SATISFACTORY DRUG?

It is stated, on the authority of competent historians, that there never has been a period in human history when drugs have not been known. Although one may cite many older references to the employment of the long familiar compounds of antimony or mercury, of aconite, belladonna or cinchona products, in contrast with the simple decoctions of camomile, spearmint, sage and the like, it is nevertheless true that the exact study of the actions of drugs dates back scarcely three quarters of a century. The modern science of pharmacology has arisen since the establishment of its first special laboratory at Dorpat in 1856, a period little beyond the working life-span of many living physicians.

In the earlier days of this scientific development along modern lines, the foremost efforts were directed toward ascertaining precisely how the known drugs act in the body in both health and disease. In a sense, such investigation often served merely to give a rational

explanation to long established empiricism—a fact well illustrated in the development of present-day information about digitalis, for example.

Presently, however, it no longer sufficed to explain the actions of well known drugs or to unravel the possibilities of less familiar ones. The development of organic chemistry, in particular, paved the way for the creation of entirely new products endowed with novel potencies. To some extent it has become possible to predict some of the action of such synthetic compounds, and even to undertake their preparation with the precise purpose of developing certain desired properties. It is in this way that the list of useful antiseptics, antipyretics, analgesics and narcotics has already been extended to include many new and unusually desirable compounds. To a certain extent it has become possible for the physician to affect a desired tissue without interfering with the function of other tissues. With the progress of our understanding of the etiology of infectious diseases and other maladies of microbiotic origin, it has become highly desirable to destroy the harmful invader without injuring its host. For such purposes the ideal drug would be one that would kill the parasites without harming the patient.

In the discovery of specific chemicals as the medium of salvation from certain forms of disease, particularly those of infectious origin, lies a hope, perhaps somewhat utopian, for the medical progress of the future. Meanwhile, plans are being laid in various laboratories for such projects. The busy practitioner may not have given much consideration to all that this involves in respect to both constructive directions and criticism. A good summary of the requirements for a drug that can be considered a satisfactory therapeutic agent has recently been compiled by Christiansen [1] of the Medical School of Harvard University. The first dictum is that the effective therapeutic dose should be far below the toxic dose. Low toxicity is particularly desirable for drugs that are to be placed in the hands of patients. Ease of administration is extremely advantageous; the preference for a drug that can be used safely and effectively is obvious. Stability is a quality of great value, because a substance that decomposes readily entails financial loss and may either lose potency or acquire toxicity. Drugs should as a rule preferably exhibit ready solubility and be susceptible of rapid absorption under all conditions in which they may be prescribed. When acute disease is involved or life is in danger, it is important that relief shall be secured promptly. Drugs for use by injection should not only be readily soluble but also withstand sterilization without detriment. They should not injure the tissues locally, whether these be subcutaneous, muscular or vascular. To act efficiently, the substance should not be excreted or destroyed in the body before it has had time to act on the infecting agent; nor should it tend to be excreted so slowly that accumulation in the internal organs may give rise to delayed symptoms of poisoning. Finally, tolerance to the drug should not be readily developed by the parasite against which the drug is to be used. These are, indeed, exacting demands. They illustrate the quandaries of the investigator in the field of the synthetic production of new drugs. They should also move us to a high sense of obligation when success, even in limited degree, crowns his tiresome efforts.

1. Christinnsen, W. G.: Organic Derivatives of Antimony, New York, Chemical Catalog Company, 1925.

NAUSEA

One reason why experimentation on animals has yielded so much information of value in relation to the physiology and pathology of man lies in the possibilities it affords for direct observation of functions that cannot readily be studied in the same way during life in the human organism. In the case of sensations, however, the situation is not so simple. The interpretation of sensations, so far as they may arise in animals, offers many difficulties. Frequently the existence of certain sensory states can only be postulated because of some associated phenomena. Nausea is a sensation; consequently, as a recent writer [1] has pointed out, its presence must be identified with some objective or motor manifestation before it can be studied effectively by animal experimentation.

For this reason the mechanism responsible for the genesis of nausea has not yet been clearly expounded. Keeton [1] of Chicago has recently recorded the sensations arising from duodenal stimulation in a group of patients, of whom many showed circulatory instability. Chief among these sensations was nausea, although statements about dizziness, pressure sensations referable to the head and neck, headache and syncope were also elicited. There are various reasons for assuming that nausea may be related to duodenal motor activities, among which antiperistalsis, increased tonus of the pylorus, or increased tonus of the upper reaches of the intestine are the foremost to suggest themselves. The descriptions of the onset of nausea in "waves" do not contradict any of these possibilities. After reviewing the somewhat indefinite evidence, Keeton has joined the group of those who believe that nausea results from a motor duodenal dysfunction, a pathologic duodenal antiperistalsis being at present the most probable of the explanations. Nausea may, of course, originate from widely different localities in the body. Distended hollow organs, the pregnant uterus, or a traumatized nerve may initiate the changes that lead to the characteristic sensation. This does not negate the possibility that they act through the intermediation of change in duodenal motor function, though such an explanation cannot yet be regarded as definitely

1. Keeton, R. W.: Nausea and Related Sensations Elicited by Duodenal Stimulation, Arch. Int. Med. 35: 687 (June) 1925.

proved. The other sensations, such as dizziness and headache, that can be elicited in some persons through influences brought to bear on the duodenum, by mechanical or chemical means or both, are regarded by Keeton as of circulatory origin. He explains them on the basis of a reflex spread into the vegetative (sympathetic-autonomic) nervous system, involving primarily the vasomotor mechanism.

Nausea is commonly a "prodromal" stage in the act of vomiting. If Keeton is correct, the primary motor phenomenon in this consists of an intestinal antiperistalsis. Secondary motor phenomena are to be found in salivation, sweating, circulatory and pilomotor changes. The muscles of the hairs may bring about the familiar "goose flesh." These effects are developed in the course of the spread of the vomiting act through the vegetative nervous system. The stage of "emesis" results, on Keeton's hypothesis, when the convulsion sweeps out of the vegetative system and involves the muscles of the stomach, esophagus, respiration, and the skeletal muscles in general.

ACUTE INTESTINAL OBSTRUCTION

Acute intestinal obstruction is one of the disconcerting clinical conditions that present a confusing problem to the physician. Intestinal occlusion can be imitated experimentally so as to bring about many symptoms identical with those seen in human patients; nevertheless the search for the determining etiologic factors has directed the investigators into a considerable variety of pathways each of which seemed at first to lead to a correct solution, yet ultimately failed to satisfy on critical consideration. The fallacy of *post hoc ergo propter hoc* seems to have been displayed conspicuously in this quest. Concomitants have doubtless been confused at times with causes. Consequently the question of the lethal factors remains at issue and therefore justifies further debate.

It is important to distinguish between two well defined types of acute intestinal occlusion. In one of these, the acute strangulation observed in volvulus, intussusception and strangulated hernia, there is not merely a closure of the intestinal lumen but also a more or less extensive interference with the arterial, venous and lymphatic circulations of the bowel wall and mesentery. Death in such cases is typical of shock, toxemia and peritonitis. Temperature, pulse, blood pressure and respiration may be affected very early. A second type of simple obstruction is seen when there is complete blockage of the bowel lumen only, with a minimum of circulatory involvement. This may be brought about by calculi, foreign bodies, adhesions and bands. The symptoms are somewhat delayed in uncomplicated cases; and they are as a rule free from "shock" manifestations of the acute sort.

From time to time the pendulum of enthusiasm for a given theory has swung from one extreme to another. Even today we are not prepared for a final opinion. Since animals having simple intestinal obstruction may live for some time, shock can scarcely be the dominant lethal factor. Bacteremia has long seemed to offer a highly plausible hypothesis; but the absence of a demonstrable invasion of micro-organisms in fatal cases prompts a search for a more tenable etiology. Some plausibility was given to the theory of perverted secretion; i. e., the secretion of a toxin by the intestinal mucosa proximal to the obstruction. Its fallacy seems to be established by the evidence that animals live after drainage of open duodenal and jejunal loops into the peritoneal cavity.[1]

The accusation of toxemia due to the absorption of poisons produced by bacterial action on the stagnant bowel fluids accumulating above the obstruction cannot be so easily dispelled. Foster and Hausler[2] have marshaled the evidence against it. From their experiments at the University of Oregon Medical School in Portland they take issue with those who have injected fluid from occluded intestinal loops intravenously and provoked untoward symptoms. Undoubtedly, as they admit, intestinal secretions may become very toxic when exposed to bacterial action. Death following intravenous administration, however, proves little, since it is well known that many substances are fatal when introduced directly into the blood stream, whereas if allowed to pass through the normal intestinal mucosa the poisonous properties are not similarly manifested. Introduced into the blood, "peptone" is a poison; in the alimentary tract it functions as a food.

The harmfulness of dehydration, a feature so pronounced in many cases of obstruction with consequent vomiting and failure of fluid intake, is not so easily denied. The loss of fluid is admittedly a complicating factor, though probably not the decisive cause of death in most cases of simple obstruction. Replacement of fluid is helpful in inducing relief. Since death in simple obstruction uncomplicated by tissue injury falls within the same period of time as in complete starvation (i. e., lack of food or water) the Oregon investigators are inclined to ascribe to the latter the decisive lethal influence. The chemical changes in the blood in simple intestinal obstruction are almost identical with those found in complete starvation. Hypochloremia, a symptom described by Haden and Orr,[3] is not present. Dehydration is usually very pronounced. Fluid loss through urinary and respiratory excretion is probably similar in starvation and obstruction. As Foster and Hausler point out, the increased viscosity of the blood, the high red cell and hemoglobin values, the decreased blood volume flow through the extremities,

1. Dragstedt, L. R.; Moorhead, J. J., and Burcky, F. W.: Experimental Study of Intoxication in Closed Intestinal Loops, J. Exper. Med. **25**: 421 (March) 1917.
2. Foster, W. C., and Hausler, R. W.: Acute Intestinal Obstruction, III, Simple Obstruction, Arch. Int. Med. **36**: 31 (July) 1925.
3. Haden, R. L., and Orr, T. G.: Effect of Inorganic Salts on the Chemical Changes in the Blood of the Dog After Obstruction of the Duodenum, J. Exper. Med. **39**: 321 (Feb.) 1924.

the chemical changes in the blood, the extreme loss of body weight, and the ultimate alterations in temperature, pulse and respiration—all have been observed in studies of starvation. Hence their dictum: death in uncomplicated cases of acute intestinal obstruction is due to starvation.

Current Comment

FREQUENCY OF HYPERTHYROIDISM AND GASTRIC CANCER

By investigation of United States Census and draft board reports, a British statistician [1] has discovered a positive frequency relation between hyperthyroidism and cancer of the stomach. Furthermore, the same correlation holds for Switzerland. To find out what underlies this relation obviously requires studies beyond the field of statistics. A subsidiary study discloses that, in the United States, simple hyperthyroidism and the exophthalmic type are associated, and here the United States and Switzerland are not in accord. In Switzerland, where simple hyperthyroidism is frequent, the exophthalmic form is not. The statistician speculates on two possible factors in the production of the exophthalmic type: "(i) a goiter-producing factor whose intensity is indicated by the prevalence of simple goiter, (ii) another factor, probably of nervous origin, which is only present to a slight extent in Switzerland, but is more pronounced in the United States and almost universally present in England and Wales." The statistical method frequently uncovers points for intensive practical research. Unfortunately, the figures occasionally lead to impressions that never are justified by actual observations.

EFFECTS OF WAR GASES ON THE LUNGS

Usually the study of pathology is looked on as an aid primarily to the diagnosis, treatment and prognosis of disease. The widespread institution of workmen's compensation acts, and more recently the problem of care and compensation for soldier victims of the World War, have made new and often unanticipated demands for accurate information about pathologic conditions. An illustration of this is afforded by the questions arising in relation to the sick veterans who have been gassed. The immediate clinical effects and the acute lesions are already known; but it is not yet clear whether chronic disorders persist after the symptoms have subsided. Koontz [2] of the Edgewood Arsenal Medical Research Division has completed a study of the delayed effects to approximately lethal concentrations of phosgen, mustard gas, lewisite, chlorin, chlorpicrin and methyldichlorarsin in dogs, a species having lungs even more delicate than those of man. In the majority of the animals, pathologic lesions could not be demonstrated from two months to a year after recovery from the gassing. In a minority of instances, permanent lung damage was discovered; but it was not widespread, being confined generally to small areas, and usually in the form of small patches of organization, thickening of the bronchial walls with loss of elasticity, or occasional closing of the bronchioles by organized exudate. Such damage ultimately results in a small amount of fibrous scar tissue that can scarcely affect the functional efficiency of the lungs. Therefore Koontz believes it reasonable to conclude that in the vast majority of surviving human patients, who were not gassed so severely and who receive better hospital care all lesions disappear within a short time after the gassing. The small amount of fibrosis remaining in the minority of cases can hardly be a cause of serious disability.

1. Stocks, Percy: Some Further Notes on Cancer and Goiter Distributions, Biometrika **17**: 159 (June) 1925.
2. Koontz, A. R.: When Do Lungs Return to Normal Following Exposure to War Gases? Arch. Int. Med. **36**: 204 (Aug.) 1925.

CHIROPRACTIC IN THE DRAMA

It was inevitable that the farce that is chiropractic should find a dramatist. In "Easy Terms," a three act comedy that opened in Chicago recently and will proceed shortly to New York, Crane Wilbur has made his villain one of the smooth talking fraternity; he acts the part himself to perfection. The lines bring out logically the predominance of woman patients in the chiropractic clientele. A scene in which a chiropractic treatment is given to Donald Meek, who plays the part of the constantly abused male parent of the family, is the funniest scene shown in Chicago since Baileff's Chauve-Souris gave Chekhov's "The Dentist." The final lines on the subject, perhaps a sop to the chiropractors, are:

Peter.—"I've just found out that that fellow isn't even a chiropractor; he hasn't got a diploma."

Pater.—"My G——; do you have to have a diploma for that?"

So the farce that forms the most of chiropractic has found its interpreter! Now who will show the tragedy of its ignorant incompetence?

DIGESTIVE ENZYME THERAPY ON THE WANE

Not so very many years ago many physicians would have considered it a handicap to be deprived of the use of digestive enzymes in their daily prescribing. Even the most conscientious, while resisting the alluring color and pleasing taste of a widely advertised elixir claimed to contain pepsin, pancreatin and diastase, nevertheless gave pepsin in certain conditions, diastase in others, and, in cases of supposed pancreatic deficiency, pancreatin, in the hope that the latter would safely reach its destination and have some action. Today a vast majority of clinicians make little or no use of digestive enzymes. The report of W. A. Bastedo,[1] summarizing the replies to a questionnaire submitted at the request of the Council on Pharmacy and Chemistry to the members of the American Gastro-Enterological Association, brings this out forcibly. The replies of fifty-nine gastro-enterologists, members of the American Gastro-Enterological Association, indicate that many do not prescribe gastric enzymes at all,

1. Bastedo, W. A.: The Use and Utility of Digestive Enzymes in Therapeutics, J. A. M. A. **85**: 743 (Sept. 5) 1925.

while those who do employ such enzymes confine their use almost wholly to cases of demonstrated or supposed enzyme deficiency. Furthermore, almost all who do prescribe them show no great enthusiasm over the results of their use, except possibly in the case of pancreatin in proved pancreatic deficiency. The conclusion seems inevitable that such preparations are of minor importance in therapeutics. Unfortunately, the report does not permit any definite conclusion with regard to the value or uselessness of any of the gastric enzymes now offered for the physician's prescription. However, it fully justifies the estimate of the Council on Pharmacy and Chemistry which states, in the chapter on Digestive Enzymes (N. N. R., 1925), that the utility or need for the internal administration of digestive enzymes is problematic. The Bastedo report is additional evidence of the untiring efforts of the Council to supply the medical profession with up-to-date and impartial information with regard to the actions and value of drugs.

INTERNATIONAL UNITS IN ANOTHER FIELD

Twenty-one countries were represented at the first international congress of radiologists, in July. The two hundred and seven British hosts were followed, numerically, by Germany and the United States, with sixty-five and sixty-three representatives, respectively. One outstanding effort of the congress was to fix international units and standards for roentgen-ray work. A group, headed by Sir William Bragg, will nominate an international committee to study measurement. The day is past when all written science was in Latin and all scientists could read it. In the present day, it is encouraging to see one organization after another striving for universal adoption of rational units of measure.

DUST AND PULMONARY DISEASE

Although mineral dust was thought to be a cause of pulmonary disease in the days of Paracelsus, scientific consideration did not assign it proper importance in this country until within the last ten years. In 1917 the Bureau of Mines issued a bulletin on silicosis in miners in the Joplin district of Missouri. More recently the Department of Labor has issued another bulletin with reference to the granite industry, and various other contributions have appeared elsewhere. Especially notable is the work of Movrogordato and Watkins-Pitchford at the South African Institute for Medical Research. The state department of labor in New York[1] has just published a special bulletin on pneumonoconiosis which gives complete histories, examinations, temperature charts, roentgenograms and colored plates of the lungs in two cases of silicosis and one case of anthracosis with tuberculosis superinduced. This is an effort to stimulate study and to throw light on a health problem that affects chiefly workers in mines and certain mills. The millions of people in our large cities who constantly breathe air that is unnecessarily polluted with both gaseous and solid materials will find in it much to interest them.

1. Bull. New York State Department of Labor, 1925.

Association News

MINUTES OF THE MEETING OF THE BOARD OF TRUSTEES, HELD AT HEADQUARTERS, CHICAGO, SEPT. 4, 1925

The Board of Trustees of the American Medical Association met in Chicago, September 4.

FINANCE COMMITTEE

Dr. Thomas McDavit, Dr. C. W. Richardson and Dr. J. H. J. Upham were appointed members of the Finance Committee, and these appointments by the chairman were confirmed by the Board.

NOVEMBER MEETING

The date of the next meeting of the Board was set for Nov. 19, 1925.

COMMITTEE ON SCIENTIFIC EXHIBIT

The report of the Committee on Scientific Exhibit was received, and Dr. Ludvig Hektoen of Chicago and Dr. Urban Maes of New Orleans were reelected for a period of three years to serve as members of the Advisory Committee to the Committee on Scientific Exhibit.

CHAIRMAN OF LOCAL COMMITTEE OF ARRANGEMENTS FOR DALLAS SESSION

The nomination by the Dallas County Medical Society of Dr. E. H. Cary for chairman of the Local Committee of Arrangements was confirmed by the Board.

COUNCIL ON PHYSICAL THERAPY

In compliance with the terms of resolutions adopted by the House of Delegates, a Council on Physical Therapy was created and the members of the Council elected. The names of the members will be published as soon as acceptances have been received.

ARCHIVES OF PATHOLOGY AND LABORATORY MEDICINE

It was decided to publish a journal on pathology to be known as the *Archives of Pathology and Laboratory Medicine*, beginning with January, 1926. The members of the editorial board for this new journal were selected, and their names will be published when acceptances have been received.

APPROPRIATIONS BY BUDGET PLAN

The Board adopted as a definite policy that, except in extreme emergencies, no appropriations would be made for the use of councils, bureaus or committees until budgets had been submitted to the Board for consideration at its regular annual meeting.

GORGAS MEMORIAL INSTITUTE

A communication from Dr. Franklin H. Martin, submitting proposed amendments to the by-laws of the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated, whereby three officers of the American Medical Association would be made related directors of that institute, one of whom would serve as a member of its executive committee, was referred to a special committee to report at the next meeting of the Board of Trustees, to be held in November.

NATIONAL HEALTH COUNCIL

A communication from Dr. A. J. Lanza, executive secretary of the National Health Council, proposing that the American Medical Association become a member of that organization, was also referred to a special committee, which will report at the November meeting of the Board of Trustees.

REGULATIONS UNDER VOLSTEAD ACT

A committee provided for in resolutions adopted by the House of Delegates, whose duty shall be to draft regulations under the Volstead Act to be submitted to the Prohibition Commissioner and to the Commissioner of Internal Revenue, was selected as follows: Dr. W. H. Mayer, Pittsburgh; Dr. Alexander Lambert, New York, and Dr. Paul D. White, Boston.

DISASTER RELIEF

Dr. W. A. Pusey, chairman of the Committee on Disaster Relief, submitted a report outlining a plan of organization whereby in times of disaster the American Medical Association, its constituent state associations and its component county societies, through properly designated persons, can undertake to render medical relief in cooperation with the American Red Cross. This plan will be submitted through the chairman of the Committee on Disaster Relief to the constituent state associations and to the component county societies.

REDUCTION OF SPECIAL TAXES

The Board approved a draft of a communication to be addressed to the chairman of the Committee on Ways and Means of the House of Representatives, to the chairman of the Committee on Finance of the Senate and to the Secretary of the Treasury, seeking reduction of certain taxes imposed on physicians by the federal government, and amendment of regulations whereby the deduction in income tax returns of expenses incurred in attending scientific meetings and graduate courses of instruction are now disallowed. The purpose of this letter is to seek relief from what is believed to be unfair discrimination with regard to income tax reduction, and to secure relief from the imposition of the tax now borne by physicians under the Harrison Narcotic Act.

SURVEY OF NURSE EDUCATION

The Board of Trustees, after the matter had been considered by its Finance Committee, did not concur in recommendations of the Council on Medical Education and Hospitals and the Reference Committee on Medical Education of the House of Delegates to the effect that an appropriation be made for the purpose of making a survey of nurse education in the United States.

NEW MACHINERY

Authorization was given for the purchase of needed machinery for the printing plant of the Association.

RESEARCH FELLOWSHIPS

The question of the establishment of research fellowships was considered by the Board and referred to a committee whose report will be received at the meeting of the Board to be held in November.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. William D. Haggard, Nashville, Tenn., President of the American Medical Association, will be the principal speaker at the meeting of the Northwest Alabama District Medical Society, Decatur, September 25; the society comprises seventeen North Alabama counties.

Quo Warranto Proceedings Against Chiropractors.—Dwight Evans, W. A. Nesbit and Beatrice Nesbit, chiropractors of Anniston, were given a hearing in quo warranto proceedings, August 28, in which they were called on to show why they should not be barred from practicing in Calhoun County. Evans, it is reported, was sentenced to sixty days in prison and fined $250; Nesbit pleaded guilty and was fined $50 and costs, and the case against his wife was nolle prossed. The board of censors of the Calhoun County Medical Society preferred charges against Evans a year ago; he was fined $100 and costs, but pending the outcome of an appeal, the charges were withdrawn on agreement that he would cease practicing in Alabama. Evans left Anniston, but returned several months ago and reopened an office.

ARKANSAS

Personal.—Dr. John T. Palmer, Pine Bluff, has been reappointed member of the state medical examining board.—Dr. William F. Manglesdorf, Little Rock, has been appointed chief chemist for the department of conservation and inspection at the state capital, Little Rock.

Medical School Opens at Full Capacity.—The forty-seventh annual session of the University of Arkansas School of Medicine, Little Rock, opened, September 17, with an enrolment of 175, the largest in its history, which is full capacity. There are sixty students in the freshman class, fifty of whom are resident students. The first two years of instruction will be given now at the laboratory building and the last two at the Isaac Folsom Clinic and the Little Rock General Hospital, St. Vincent's Infirmary and the Baptist Hospital. The following additions have been made to the faculty; Byron L. Robinson, professor of microscopic anatomy; Dr. Herbert H. Howze, instructor in pathology and serology; Dr. George Vincent Lewis, instructor in surgery; Dr. Royal Jackson Calcote, instructor in obstetrics and gynecology, and Dr. Joseph P. Delaney, Jr., instructor in medicine. Dr. James R. Wayne, Jr., will be associate professor of surgery; Dr. Verdo Toy Webb, instructor in hygiene, and Dr. Oliver C. Nelson, formerly of the Mayo Clinic, Rochester, Minn., associate professor of medicine. Fifty beds have been set aside in the Baptist Hospital for the treatment of the poor, the only expense attached being the actual cost of hospital maintenance.

CALIFORNIA

Stanford University to Perpetuate Work of Burbank.—It has been announced that tentative plans have been made for the transfer of the experimental farm of Luther Burbank at Sebastopol to the control of Stanford University which will raise an endowment fund sufficient to insure carrying on his work.

State Board Sustained.—Judge Shaw in superior court, Los Angeles, recently rendered a comprehensive opinion, in which he sustained the action of the state board of medical examiners in revoking the license to practice of Dr. Frank P. Young, Los Angeles, who was charged, among other things, with issuing fradulent diplomas (THE JOURNAL, Nov. 29, 1924, p. 1774).

Another "Foreign Graduate" Arrested.—A representative of the state board of medical examiners arrested "Dr." W. Whitman, 643 Call Building, San Francisco, July 11, on a charge of practicing medicine without a license and of obtaining money under false pretenses. Whitman is said to have told a "patient" who happened to be an operative of the state board that he was a graduate of German and French medical colleges and had taught the "wonders of radium ore treatment" at Johns Hopkins University Medical School and other universities throughout the world. He advised this patient to drink water charged with "Anzac-Radium Ore Brickette and never grow old," and to "take Radioactive Polizer Compound and never be sick." Whitman is not a physician but is said to be a director of the Muidar Radium Ore Company, which was incorporated in California, July 1. In Whitman's office were a stethoscope and a sphygmomanometer. He is said to have prescribed Radium Ore Brickettes (for from $25 to $100) and Polizer Compound Capsules and radium pills. Whitman admitted that the ore used was not radium.

DISTRICT OF COLUMBIA

Report of Health Officer.—The Washington, D. C., death rate among infants under 1 year of age is the lowest in its history, according to the annual report of District Health Officer Fowler. The death rate for white infants was 61.1 per thousand and 100.2 for colored infants, an average of 75.7. The new low death rate for infants is due to the improved education of mothers, and for this much credit is due medical science. The report shows that in 1924, 147 cases of smallpox were reported for the District; from January to June, 1925, there were fifty-nine cases and twenty deaths; of the fifty-nine persons who had smallpox, only four had ever been successfully vaccinated—one fifty years before the attack, one thirty-eight years before, one eighteen and one fourteen years before the attack. Each of these patients had the disease in relatively mild form and recovered.

ILLINOIS

Resolution on Birth Control.—At a recent meeting of the Rock Island and Scott County Medical Society at Pine Knoll Sanitarium, Davenport, Iowa, Dr. Carl H. Davis, Milwaukee, spoke on "The Diagnosis and Treatment of Nonmalignant Diseases of the Cervix Uteri"; Dr. Lewis Cole on "Gastric

Ulcer," and Jacob S. Weber, Davenport, on "Clinical Observations While in Europe." At the business session of the meeting the following resolutions were adopted:

WHEREAS, Sociologic contraception has little, if anything, in common with therapeutic contraception; and

WHEREAS, The American Birth Control League is a lay organization essentially sociologic in its aims and programs; and

WHEREAS, The American Medical Association, the Illinois Medical Society, and the Rock Island County Medical Society have consistently opposed the bad social judgment and the bad ethics exhibited by the lay organizations entering or dictating the practice of medicine; therefore be it

Resolved, That the Rock Island County Medical Society decline to sanction the program of the Birth Control League in its establishment of local agencies of sociologic practice; and therefore be it further

Resolved, That members of the Rock Island County Medical Society be and hereby are instructed that affiliation in practice with the above mentioned lay organization does constitute an unethical association, and is unprofessional conduct; and be it further

Resolved, That the New York office of the Birth Control League be informed of this action and that this action be accorded due publicity among the medical profession and elsewhere.

Chicago

Personal.—Sir George Lenthal Cheatle, F.R.C.S., London, England, arrived in Chicago, September 10, for a brief visit. ——Alden B. Dawson, Ph.D., associate professor of anatomy, resigned his position with Loyola University School of Medicine to accept an appointment as associate professor of biology, New York University, New York.

Proposed Commission of Experts.—At a meeting of the council of the Illinois State Medical Society in Chicago, September 9, resolutions were adopted calling for the appointment of a commission of experts, to be paid by the state, to sit in cases in court in which the plea of insanity is made. A committee comprising Drs. Jacob C. Krafft, Chicago, Harold M. Camp, Monmouth, and John R. Neal, Springfield, was appointed to study the question of "insanity defense," to confer with the Illinois and Chicago bar associations and the American Institute of Criminology, and to make a report. The council considered, it is reported, that the employment of psychiatrists and experts in criminal cases should be taken out of the hands of both the state and the defendants.

Dr. Denney to Speak on Leprosy.—Surgeon General Cumming, U. S. Public Health Service, has detailed Dr. Oswald E. Denney, chief medical officer, National Leprosarium, Carville, La., and formerly in charge of the Culion Leper Colony, Philippine Islands, to address the joint meeting of the Chicago Medical Society and the Chicago Tuberculosis Society, November 18, in collaboration with Dr. John Ritter, clinical instructor on tuberculosis, Rush Medical College, on "Noticeable Parallelism and Similarity Between Leprosy and Tuberculosis." There will be a lantern slide demonstration also. ——At the meeting of the Chicago Tuberculosis Society, City Club, October 1 (8:00 p. m.), Dr. Allen K. Krause, Johns Hopkins University Medical School, Baltimore, will speak. There will be a dinner in honor of Dr. Krause at 6:30; members of the medical profession are invited.

Appointments at Northwestern University.—Dr. Andrew C. Ivy has been appointed professor of physiology and chairman of the division of physiology and pharmacology at Northwestern University Medical School, and Dr. Carl A. Dragstedt has been elected professor of pharmacology. Drs. Newell C. Gilbert and William H. Holmes have been promoted to associate professorships in medicine, and Drs. Martin R. Chase, Walter H. Nadler, Lawrence H. Mayers and Leon Unger to assistant professorships in medicine. Dr. Loyal E. Davis has been promoted to associate professor of surgery and made director of the department of surgical research and chief of the department of neurosurgery. Drs. Jacob R. Buchbinder, Sumner L. S. Koch, Paul B. Magnuson, and Victor L. Schrager have been made assistant professors of surgery, and Drs. Carl F. Bookwalter and Ellison L. Ross assistant professors of otology.

INDIANA

New Laboratory Service.—The state board of health laboratory is preparing to give physicians of the state the benefit of the Kahn precipitation test for syphilis and the complement fixation test for tuberculosis. The Kahn test will be made in addition to the Wassermann test, and clinicians are requested to report their opinion of the results. It will be made with the same specimens that are sent in for the Wassermann test, and the report made on the regular Wassermann report card. A precipitation test for tuberculosis will also be made on the same serums on which a complement fixation test for tuberculosis is performed, but the results will not be reported until comparisons have been made in the laboratory for several months.

IOWA

Hospital News.—The board of control of state institutions has taken bids for a fireproof building at the Hospital for Epileptics and School for Feeble-Minded at Woodward.——Mrs. Catherine Schaller recently offered $50,000 for the establishment of a hospital at Storm Lake, to be known as the Fred Schaller Memorial Hospital.——Dr. Edward C. Meggers has purchased the Clark Hospital at McGregor.

KENTUCKY

Memorial Number of Journal.—The September number of the *Kentucky Medical Journal* is a memorial to the late Dr. Lewis Samuel McMurtry, Louisville, by special order of the Kentucky State Medical Association. Among other prominent positions which Dr. McMurtry filled was that of president of the state medical society (THE JOURNAL, Feb. 9, 1924, p. 487).

Cooperative Control of Venereal Disease.—The state board of health has arranged to provide for the treatment of indigent patients who have venereal disease by paying half the cost of the drugs used and making drugs available at cost to clinicians. The patient will pay for the cost of drugs and other material not to exceed $2, and if able to pay more than that sum, he automatically becomes a private patient. To further this plan, the state board is appointing "cooperative clinicians" throughout the state, and members of the state medical society who are listed by the county health officer as interested in venereal disease are eligible for these appointments. The U. S. Public Health Service supplies each clinician with periodicals for use in this work; the Hot Springs Venereal Disease Clinic is open to clinicians, and films of skin disease simulating syphilis are available to the state board for assisting physicians. A representative of the U. S. Public Health Service is cooperating with the Kentucky State Board of Health in furthering public instruction in the control of venereal disease.

MICHIGAN

Tuberculosis Clinics Made Permanent.—Hereafter Oceana County will have regular monthly tuberculosis clinics with Dr. W. C. Reineking, superintendent, Muskegon Sanatorium, as examining physician. Through the cooperation of the Oceana County Medical Society and the women's clubs, it has been decided to make these clinics permanent, the next one being held at Hart the first Thursday in October. Oceana County, it is said, for the last ten years has had an average of one death per month from tuberculosis.

Society News.—Dr. Alexander M. Campbell addressed the Eaton County Medical Society at its annual picnic recently at Pine Lake, Olivet, on "Meddlesome Midwifery and Other Obstetric Problems."——Dr. Walter F. Martin of the Battle Creek Sanitarium, Battle Creek, addressed the Jackson County Medical Society recently on "Some Obscure Genito-Urinary Lesions Presenting Vague or Misleading Abdominal Symptoms," illustrated with lantern slides and roentgenograms.——Dr. Loyal E. Davis, Chicago, associate professor of surgery, Northwestern University School of Medicine, will address the Wayne County Medical Society, Detroit, September 28, on "Prognosis of Brain Tumor."——Dr. Chris M. Sampson addressed a staff meeting of Providence Hospital, September 15, on "The Uses and Application of Various Physical Remedies."

MINNESOTA

Society News.—At the September 14 meeting of the Hennepin County Medical Society, Minneapolis, the president, Dr. Emil S. Geist, presented a plan for financing a new home for the society.

Personal.—Dr. James K. Anderson, superintendent and medical director of the Deerwood Sanatorium, Deerwood, has resigned, effective October 1, to become superintendent of Sunnyrest Sanatorium, Crookston.

Public Health Association Buys Home.—The Minnesota Public Health Association, formerly known as the Association for the Relief and Prevention of Tuberculosis, has purchased a fourteen-room house at 11 West Summit Avenue, St. Paul, which it has occupied since August 1 as a headquarters building, together with the Ramsey County Public

Health Association, the Minnesota State Medical Association and the *Northwestern Health Journal*. In addition to offices for these organizations, there is a health library and reading room. The president of the association is Dr. Henry Longstreet Taylor, St. Paul; vice president, Dr. Naboth O. Pearce, Minneapolis. Thus far this year, clinics have been conducted in 119 towns and forty counties. The association is a volunteer organization, financed by the sale of Christmas seals.

MISSOURI

Personal.—Dr. Frank E. Dexheimer, Columbia, has been appointed on the resident staff of the Parker Memorial Hospital at the University of Missouri.——Dr. James Stewart, St. Louis, secretary of the state board of health, addressed the Howell County Medical Society at West Plains, August 29, and attended a banquet at the Hotel Arcade given by the society.

Society News.—The Kansas City Eye, Ear, Nose and Throat Society meets at the Baltimore Hotel in the evening on the third Thursday of each month from September to May; the afternoons of the third Thursday in November, January and March are given over to clinical work. Dr. James W. May is president and Dr. Ambrose E. Eubank is secretary.——At a meeting of the St. Louis Medical Society, St. Louis, September 15, Dr. Leland B. Alford gave an address on "A Theory as to the Cause of Mental Disorder," and Dr. Reinhard E. Wobus, St. Louis, on "The Pathology and Treatment of Chronic Endocervicitis (Lantern Slide Demonstration)."

Dr. Waite's Report on Medical Education and Licensure.—Dr. Frederick C. Waite, Cleveland, who since October, 1923, has been assisting the Missouri State Board of Health in an investigation of medical education and licensure in Missouri, has submitted a report. He presents a classification of Missouri medical schools made following inspections by members of the state board of health. The board found that only the schools of medicine of the University of Missouri, St. Louis University and of Washington University could be considered "reputable" under the Missouri law. These inspections were made always by at least four members of the board and were "careful, painstaking, complete and impartial." Dr. Waite points out that Dr. Cortez F. Enloe, who was then secretary of the state board of health and its full-time administrative officer, was the only member who did not participate in any of these inspections. Every other member through such participation was able to see and learn at first-hand the conditions in at least two of the six medical schools of the state. Dr. Waite noted that graduates of some of the most notoriously poor medical schools within and outside the state had been licensed in recent years in Missouri, some of whom entered by "the backdoor of special examinations."

In studying conditions in the office of the secretary of the board, it was found that the number of licenses issued in Missouri in its forty years of licensure was in the 191,000's, which obviously was wrong. By consulting stubs of license books, Dr. Waite found that the license issued after No. 19,199 was numbered 191,200 instead of 19,200 and that for more than a year licenses had been numbered in the 191,000's without anyone in the secretary's office appreciating the absurdity. The error was corrected but even then the number did not represent the actual number of licenses issued, as it was found later that two or three times in the history of licensure one hundred numbers had been omitted and there were numerous instances where the same number had been given to two licenses. The exact number of licenses issued now can be quickly ascertained from the records. Dr. Waite considers that there has been an "extraordinarily marked improvement" in the last eight months under the new secretary of the board and that it has been accomplished after much hard work on the part of the board's present officers. Dr. Waite proposed to include much statistical matter in this report but it seems best now, he said, to report at once. The statistics were delayed on account of insufficient assistance and the magnitude of the work. It was the intention to determine, among other things, what had become of each of the 13,000 or 14,000 physicians who are not now in Missouri but who were at some time licensed in the state. How many have died, moved elsewhere, or ceased to practice, no one seems to know. The total number of physicians reported now by local registrars and others was about 6,000. Dr. Waite was requested to assist the board in investigating about sixty complaints filed in February, 1925, alleging that the licentiates named had secured their licenses through fraud. These licentiates were cited to appear for a hearing before the board as soon as investigations were completed, and twenty-four of the hearings had been held and decisions rendered at the time of this report. It was found in some cases that the allegations were unwarranted and the cases were dismissed. All of the members of the board sat in several hearings on these complaints with the single exception of Dr. Enloe, who was "present for a few moments on one or two occasions." The complete report is published in the *Journal of the Missouri State Medical Association*.

NEBRASKA

Dinner to Veteran Members.—The Omaha-Douglas County Medical Society, whose membership the secretary writes amounts to 347, will give a dinner at the University Club, September 29, in honor of twenty-five physicians who have been practicing in Omaha more than forty years; twenty-five new members will then be introduced to the society. On October 13 (or October 6) Dr. John O. Polak, Brooklyn, will speak on "Toxemias of Pregnancy"; October 27, Dr. Henry B. Lemere on "Adenoids," and Dr. Floyd S. Clarke on "Benefit Derived from Our Knowledge of Rickets"; November 10, Dr. Edwin Davis, "Perineal Prostatectomy," and Dr. Charles C. Tomlinson, "Ringworm"; November 24 (at the South Laboratory, University of Nebraska Medical School, Forty-Second Street and Dewey Avenue), "Demonstration of Heart Cases by Means of Stethophone and Electrocardiograph"; December 8 will be the annual meeting and election of officers, at which a film, prepared under the direction of Dr. Lewis G. Cole, New York, demonstrating "Gastric Motor Phenomena," will be exhibited.

NEVADA

State Medical Election.—At the annual meeting of the Nevada State Medical Association, Elko, September 4-6, Dr. Arthur J. Hood, Elko, was elected president; Drs. William L. Samuels, Reno, and Claudius W. West, Reno, vice presidents, and Dr. Horace J. Brown, Reno, secretary-treasurer. The 1926 meeting will be at Reno.

New York City

Personal.—Henry J. Fischer has been elected president of the United Hospital Fund to succeed William F. Morgan, resigned, who is now honorary president of the fund.

Hospital News.—The board of directors of the Wyckoff Heights Hospital Society of Brooklyn met, September 14, to discuss plans for a $500,000 additional wing to the hospital. ——The cornerstone of the new Home for Nurses and Training School of the Brownsville and East New York Hospital at Rockaway Parkway and Avenue A, Brooklyn, was laid, September 13.——Contracts have been made for the construction of fifteen new buildings for the Brooklyn State Hospital to be located at Creedmoor and costing $4,069,847.

Society News.—The fall meetings of the New York Electrotherapeutic Society on the first Wednesdays of each month, begin, October 7, at the New York Academy of Medicine. Each alternate meeting will be at the City Club of New York, preceded by an informal dinner for members and guests. At the October meeting Dr. Norman E. Titus will give a report of the recent International Congress of Radiology and Electrology and Dr. Richard Kovacs a report on the recent annual meeting of the American Electrotherapeutic Association.

Harmless Organisms in City Water.—The department of water supply announced, September 9, that the unusual taste of the drinking water in parts of the city for several days had been caused by the presence of the harmless organisms —asterionella and dinobryon. The deputy chief engineer said that in order to kill the asterionella 0.18 of one part of copper sulphate to 1,000,000 parts of water had been added. The water is now being treated, it was said, in parts of Harlem, Washington Heights, Marble Hill, Fort George and South and East Bronx.

NORTH CAROLINA

Change of Date and Place of Meeting.—The secretary of the Medical Society of the State of North Carolina writes that the next annual meeting of the society will be at Wrightsville Beach, June 14-16.

Personal.—Dr. Hubert A. Royster, Raleigh, ex-president, North Carolina State Medical Society, addressed physicians

and members of the Rotary Club at Henderson, September 8, on "Modern Health Tendencies and Opportunities."

Committee of Dentists.—Henry O. Lineberger, president, North Carolina State Dental Society, is chairman of a committee of five dentists, comprising S. J. Betts, Hillsboro, Isaac H. Davis, Oxford, G. L. Hooper, Duke, J. H. Judd, Fayetteville, designated by the dental profession to endeavor to secure the erection and maintenance of a first-class college of dental medicine and surgery in North Carolina.

Hospital News.—The Johnston County Hospital, Inc., Smithfield, now being constructed at a cost of $70,000, will be completed not later than Jan. 1, 1926. It will be fireproof and modern in every particular and accommodate thirty-five patients. Dr. William J. B. Orr, formerly surgeon for the Atlantic Coast Line Railroad at its Rocky Mount Hospital, will be surgeon in charge, and Dr. Thel Hooks president of the hospital.——Dr. J. Rufus McCracken, Waynesville, has opened a small private hospital for the care of eye, ear and throat cases.

Base Hospital Reunion.—The annual reunion of Base Hospital No. 65 (organized originally by Major John W. Long, Greensboro) was held in Winston-Salem, September 7, under the presidency of Major Jacob H. Shuford, M. R. C., Hickory; about 100 former members of the unit were present at the banquet and annual address by the president. A memorial service was held; the following members died during the last year: Major Marshall Hall Fletcher, George Prather, Clement Hanes, John Ridge, George Tyson, A. L. Self, Clyde Thomas and George Lawrence.

NORTH DAKOTA

Court Upholds State Board.—At a hearing before the district judge of Grand Forks, June 30, the action of the state board of medical examiners in revoking the license of Dr. W. R. Shortridge, Flasher, convicted, January 9, on a charge of performing an illegal operation which resulted in the death of Freda Nadler, Bismarck, was upheld.

OHIO

Personal.—Dr. Harry B. Stewart has been appointed physician to the Clark County Children's Home, to succeed the late Dr. William B. Patton.——Dr. William H. Benner, Tiffin, has been appointed jail physician for Seneca County to succeed the late Dr. C. W. B. Harbour.

Academy of Medicine of Toledo and Lucas County.—The September number of the academy's *Bulletin* is the "Service Bureau Number." The service bureau was established, August 1, in the academy's building to aid citizens of Toledo in their relations with physicians in such ways as special messages, and taxicab and telephone service; it is financed by the academy as a "humanitarian activity." In the first month there were 2,810 telephone calls, made mostly by patients to locate their physicians. The hospitals, newspapers, and civic and other organizations of Toledo are cooperating to make the service bureau a success.

Hospital News.—Headquarters have been opened by the Toledo Hospital Campaign Committee at 211 St. Clair Street for a $1,000,000 drive. At a recent dinner of the board of trustees of the Toledo Hospital, members of the staff, ladies' auxiliary and other friends, it was decided to go ahead with plans for the erection of a new Toledo Hospital which will accommodate a minimum of 250 patients and for which funds are already partly available. A site has not been selected, although several are under consideration. The diagnostic clinics of the Toledo Hospital will be held monthly as usual, beginning the second Wednesday evening in October, and will be open to all members of the Academy of Medicine. ——The new wing of St. Vincent's Hospital, Toledo, comprising the departments of pediatrics, obstetrics and part of the surgical department, has been opened. It has a capacity of 110 patients.

OKLAHOMA

Hospital News.—Dr. H. Clay Manning, Cushing, has leased the Cushing Municipal Hospital for another year.——Dr. Alva J. Weedn, Duncan, is erecting a modern two story hospital of forty rooms.

Personal.—Dr. James E. Webb, Tulsa, has been appointed county physician, to succeed Dr. Lawrence C. Northrup.——Dr. Carroll M. Pounders has been elected full-time school physician of the Oklahoma City schools, to succeed Dr. Walter A. Lackey.——Dr. Fred P. Helm, formerly of Oklahoma City, has been appointed superintendent of health in Ottawa County. Dr. Helm will work in cooperation with the county health officer, Dr. W. B. Smith, devoting his time principally to medical inspection in schools, sanitary inspection and work of an educational nature.

OREGON

Hospital News.—The New Lincoln Hospital at Toledo has been completed and turned over to the Pacific Spruce Corporation, which has leased the institution for five years. The hospital has a capacity of fifty beds.

Society News.—The mayor of Medford delivered the address of welcome at the annual meeting of the Oregon State Medical Society in Medford, September 2-4, and the annual dinner to the society was given by the Jackson County Public Health Association.

PENNSYLVANIA

Society News.—The medical societies of Schuylkill, Montgomery, Bucks, Chester and Delaware counties, comprising the Third Councilor District, held a meeting at the Washington Inn, Valley Forge, September 15.

Philadelphia

Joint Distribution Committee.—At a meeting in this city, September 13, of the American Joint Distribution Committee for European Relief, Julius Rosenwald, Chicago, pledged the sum of $1,000,000 toward the campaign of the committee; another large gift to the committee's overseas work was that of $400,000 from Felix M. Warburg, New York. Among various projects undertaken by the Joint Distribution Committee is the maintenance of a Malaria Research Unit in Palestine, whose object is to demonstrate the possibility of reducing the incidence of malaria in that country at a reasonable cost.

TENNESSEE

Personal.—Dr. Franklin J. Malone, director of the Montgomery County health unit, has been appointed city health officer of Clarksville, to succeed Dr. Frank J. Runyon.

New Hospital for Memphis.—Property has been acquired at the corner of Madison and Somerville streets for the Memphis Eye, Ear, Nose and Throat Hospital, and plans are being made for the erection of a hospital there.

Typhoid Trends Upward.—The health director of Chattanooga, Dr. Charles B. Crittendon, reported, August 29, that there were twenty-two cases of typhoid in Chattanooga and that there was a tendency for the disease to spread and that no single factor had been found common to all these cases. An investigation showed, it is reported, that most of these patients contracted the disease outside the city.

UTAH

State Medical Election.—At the annual meeting of the Utah State Medical Association at Salt Lake City, September 7-12, Dr. Thomas C. Gibson, Salt Lake City, was elected president; Dr. William R. Calderwood, Salt Lake City, president-elect; Drs. Frank K. Bartlett, Ogden, Homer E. Rich, Vernal, and Lewis W. Oaks, Provo, vice presidents; Dr. Edward D. LeCompte, Salt Lake City, treasurer, and Dr. Frank B. Steele, Salt Lake City, secretary for three years.

VIRGINIA

Society News.—The Southwestern Virginia Medical Society held its annual meeting and banquet at the Mountain Lake Hotel in Giles County, August 27-28, under the presidency of Dr. Francis H. Smith, Abingdon. Among the speakers were Dr. John Shelton Horsley, Richmond, "Modern Views of Disease of the Thyroid with Reference to Hypothyroidism," and Dr. Albert H. Hoge, Bluefield, W. Va., "The Dietary Treatment of Nondiabetic Acidosis."

WASHINGTON

Personal.—Dr. Frank C. Myers, Spokane, for the last five years engaged in public health work and Indian field service, is returning to Duchesne City, Utah, to engage in private practice.

Society News.—Dr. John S. Lundy, of the department of anesthesia, Mayo Clinic, Rochester, Minn., addressed the

medical section of the King County Medical Society, Seattle, September 21, on "Carbon Dioxid as an Aid in General Anesthesia."——The executive office of the King County Medical Society is now located at 260 Stimson Building, Seattle.

WISCONSIN

Personal.—Dr. Fred J. Hodges will be in charge of the department of roentgenology at the new St. Mary's Hospital, Madison. Dr. Hodges is now making a study of various roentgen-ray departments in other cities.

Refusal of Vaccination is Refusal to Work.—The assistant district attorney of Milwaukee told the judiciary committee of the county board, August 28, that the refusal of conscientious objectors to vaccination against smallpox during the recent epidemic constituted a refusal to work and that they could not draw their salaries for the time lost from work through their refusal.

CANADA

Personal.—Dr. Frederick Grant Banting, Toronto, arrived in Stockholm, Sweden, September 13, to deliver a series of lectures.

Hospital News.—The Mountain Sanatorium near Hamilton, Ont., was damaged by fire, August 25, it is reported, to the extent of about $10,000.

GENERAL

Plague Quarantine Discontinued.—According to Surgeon General Cumming, U. S. Public Health Service, the ports of Oakland and San Pedro, Calif., and New Orleans have been declared free from plague and outgoing quarantine measures have been discontinued.

Dr. Henry R. Carter Is Dead.—As THE JOURNAL goes to press, a report is received of the death of Dr. Henry R. Carter, Washington, D. C., assistant surgeon general, U. S. Public Health Service. An obituary notice will be published in the next issue of THE JOURNAL.

Personal.—During the recent session of the First International Child Welfare Congress, Geneva, Switzerland, the president, Dr. Clemens Pirquet, sent a congratulatory cablegram to Mr. Nathan Strauss, New York, concerning his great work as a pioneer in the pasteurization of milk.—— W. F. Walker, Dr.P.H., formerly deputy commissioner of health of Detroit, assumed the duties of field director of the Committee on Municipal Health Department Practice of the American Public Health Association, September 8.

Immigration Drops 68 Per Cent.—The National Industrial Conference Board reported, September 7, that the new immigration law had brought about a net reduction of 68 per cent. in the number of immigrants admitted during the fiscal year ending June 30, the net number coming to the United States during the year being 201,586 as against 630,107 in the previous fiscal year. In several instances the number of persons returning to their native lands offset the number of those arriving in this country; only 6,203 Italians arrived, for instance, while 27,151 Italians returned to Italy. Emigration exceeded immigration also in the case of Greece, Hungary, Bulgaria, Lithuania, China, Japan, Portugal, Roumania and Jugo-Slavia.

American College of Radiology and Physiotherapy.—The annual meeting of the American College of Radiology and Physiotherapy will be at the Hotel LaSalle, Chicago, October 19-22, under the presidency of Dr. Curran Pope, Louisville, Ky. There will be clinics the first day at the Wesley, the American and the Cook County hospitals. The presidential address will be delivered, October 20, following the business session, and the annual college dinner will be Wednesday evening at 6:30, at which Drs. William Allen Pusey, formerly President of the American Medical Association, and David J. Davis, professor of pathology and bacteriology, University of Illinois School of Medicine, both of Chicago, will speak. Among the speakers at the sessions announced in the preliminary program are Dr. Gustave Kolischer, Chicago, "Diathermy on Medical Kidney Disease"; Dr. Roland G. Breuer, Norton, Kan., "The Radiological Diagnosis of Early Pulmonary Tuberculosis"; Dr. Edgar Mayer, Saranac Lake, N. Y., "Artificial Light Therapy in Tuberculosis"; Dr. Charles E. Stewart, Battle Creek, Mich., "Water as a Therapeutic Agent," and Dr. Warren B. Chapman, Carthage, Mo., "Diathermy in Infections."

Society News.—Dr. Jacob Diner, Fordham University, New York, was elected vice chairman of the American Pharmaceutical Association at the recent meeting in Des Moines.——At the recent meeting of the Western Psychological Association, Berkeley, Calif., Prof. Walter R. Miles, Ph.D., Stanford University, was elected president, Kate Gordon, Ph.D., Southern Branch of the University of California, vice president, and Dr. Warner Brown, University of California, secretary.—— At the recent meeting of the Pacific Northwest Orthopedic Association in Portland, Dr. Edward A. Rich was elected president; Dr. Charles E. McClure, vice president, and Dr. Roger S. Anderson, secretary-treasurer. Dr. Nathaniel Allison, Boston, was the principal speaker at the banquet.——At the last meeting of the Pacific Coast Oto-Ophthalmological Society in Vancouver, B. C., under the presidency of Dr. Henry M. Cunningham, Dr. Gordon B. New, Mayo Clinic, Rochester, Minn., gave illustrated lectures on the treatment of deformities of the face and neck, malignant tumors of the nose and throat, and on unusual lesions seen first by the laryngologist; Dr. George Piness, Los Angeles, "Allergies of the Upper Respiratory Tract"; Dr. Louis H. Klemptner, Seattle, "Bezold's Mastoiditis," and Dr. Arthur C. Jones, Boise, Idaho, "Acute Ethmoiditis with Rupture into the Orbit."——The semiannual meeting of the American Association of Hospital Social Workers will be in Louisville, Ky., October 19-23. Among the speakers will be Edward A. Fitzpatrick, Ph.D., Marquette University, Milwaukee, "The Function of Hospital Social Service in Strengthening Community Relationships."

Cooperation in Oyster Control.—An extensive program is being carried on by the U. S. Public Health Service for the sanitary control of the shellfish industry at all producing and shipping centers from Cape Cod to Texas. The work is being done under a special appropriation made at the last session of Congress and is in general charge of Dr. Herman E. Hasseltine, assisted by Dr. Clifford E. Waller. A research laboratory has been established at Craney Island in the vicinity of Norfolk, Va., and a corps of sanitary engineers has been assigned to the seaboard and gulf states. The U. S. Public Health Service is cooperating with the health authorities of the states and with state epidemiologists, and, as a result of combined efforts, it is believed that in the majority of states unsanitary conditions in the oyster industry, if any exists, will be improved. The Public Health Service considers that the responsibility for the sanitary control of the shellfish industry rests chiefly on the individual states, and that the requisite coordination and uniformity of control may best be achieved by mutual agreement among the states, with the assistance and cooperation of the Public Health Service and of the Committee appointed by the Conference of February 19, 1925. Since each state has full jurisdiction within its own territory and either has or may easily provide the necessary statutes, administrative agencies, and organization for carrying on within its own area control measures which may reasonably be required, the above plan seems feasible for immediate operation. It is considered that each producing state is directly responsible for the effective regulation of all production and handling of shellfish within its confines, not only for the protection of its own citizens, but for safeguarding such of its product as goes to other states, and the producing state should recognize its responsibility for the safety of the shellfish shipped into other states by issuing a "certificate" covering the product.

In order that each state may have full information concerning measures carried out in other states, the Public Health Service has undertaken systematic surveys of the machinery and efficiency of sanitary control as actually established in each producing state, and will report thereon for the information of the authorities of other states. Such reports will include a summary of the facts, and an expression of opinion as to whether the control exercised in each producing state is actually efficient and reliable. In accordance with a cooperative agreement between the Public Health Service and the Bureau of Chemistry, the Public Health Service will furnish the Bureau of Chemistry information regarding unsanitary shucking houses and shellfish beds in order that interstate shipments may be dealt with as heretofore under the Federal Pure Food and Drugs Act. The Public Health Service does not contemplate issuing regulations for the sanitary control of shellfish other than the general provisions already included in the Interstate Quarantine Regulations. The committee appointed by the Conference of February 19, 1925, however, is now drafting a report to be

submitted to the Public Health Service, which, it is understood, will make detailed recommendations relative to the measures of control which states are advised to exercise over shellfish. It is believed that the requirements will be such as may be readily met by any state which has the authority, personnel and equipment to maintain an efficient inspection and control over shellfish beds and the plants in which they are handled and packed for shipment.

Reorganization of Prohibition Districts.—In the recent reorganization under the National Prohibition Act, there has been a rearrangement of territory comprised in the various administrative units. The state is no longer the unit, and the office of federal prohibition director for each state has been abolished. Prohibition enforcement "districts" have been arbitrarily established, each with a "prohibition administrator" at its head, as shown in the following table. Applications and other communications that formerly were sent to the prohibition director of the state must now be sent to the prohibition administrator of the district within which the applicant desires to carry on business. The districts, the city in which headquarters is located, and the component states are as follows:

Dist.	Headquarters	Territory
1	Boston, Harvey Bldg.....	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island
2	New York, Onyx Bldg.....	Southern and Eastern Judicial Districts of New York, and Connecticut
3	Buffalo, Liberty Bldg.....	Western and Northern Judicial District of New York
4	Pittsburgh, House Bldg.....	Western and Middle Judicial Districts of Pennsylvania
5	Philadelphia, Flint Bldg.....	Eastern Judicial District of Pennsylvania and New Jersey
6	Baltimore, Custom House....	Maryland, District of Columbia and Delaware
7	Roanoke, P. O. Annex.....	Virginia and West Virginia
8	Charlotte, Mint Bldg.....	Georgia, South Carolina and North Carolina
9	Tampa, Franklin Bank Bldg..	Florida
10	New Orleans, Custom House.	Louisiana, Mississippi, Alabama and Arkansas
11	Louisville, P. O. Bldg.....	Kentucky and Tennessee
12	Columbus, Columbian Bldg...	Ohio and Michigan
13	Chicago, Transportation Bldg.	Illinois (except southern counties of Eastern Judicial District), Indiana, and Eastern Judicial District of Wisconsin
14	Minneapolis — until further notice	Minnesota, North Dakota and Western Judicial District of Wisconsin
15	Omaha, Omaha Nat'l Bank Bldg.	Nebraska, Iowa and South Dakota
16	St. Louis, Title Guar'ty Bldg.	Missouri, southern counties of Eastern Judicial District of Illinois and Kansas
17	Fort Worth, Farmers and Merchants Nat. Bank Bldg.	Texas and Oklahoma
18	Denver, Mercantile Bldg.....	Colorado, Utah, New Mexico
19	Helena, Veterans Bureau....	Montana, Idaho, Wyoming
20	Seattle, Thompson Bldg.....	Washington, Oregon, Alaska
21	San Francisco, Federal Bldg.	Northern Judicial District of California and Nevada
22	Los Angeles, Transportation Bldg.	Southern Judicial District of California and Arizona
23	Honolulu, Federal Bldg.....	Territory of Hawaii
24	San Juan, P. O. Bldg.....	Porto Rico

LATIN AMERICA

Rest for Working Mothers.—Chile recently passed a law which provides that every working mother must have a period of rest of forty days before and twenty days after childbirth, and that her position be held for her during this period. The law requires also that factories provide nurseries for the babies of working mothers and that free periods during the day must be granted for mothers to nurse their children.

Personal.—The gold medal of the Alvarenga prize has been given by the Academia de Medicina at Rio de Janeiro to Dr. Americo Valerio for his research on sciatica.——Prof. G. Fichera of Pavia is lecturing at Buenos Aires on the various aspects of cancer, as invited by the medical faculty.—— Prof. P. Duval of Paris is delivering a course on surgery there, at the invitation of the dean of the medical faculty.——Prof. G. Bertrand of the Pasteur Institute, Paris, was invited by the Instituto de la Universidad de Paris, at Buenos Aires, to deliver a course of lectures on biochemistry, with especial regard to agriculture.——The *Semana Médica* states that Dr. E. Slocker, Madrid, is at present in Argentina on a special mission in regard to excusing Spanish physicians from an examination to practice in that country.——Dr. D. J. Cranwell, professor of surgery, Buenos Aires, has been appointed dean of the medical faculty for four years.——Dr. P. del Rio Hortega, Madrid, has also been lecturing at Buenos Aires, on the invitation of the medical faculty, on "Morbid Variations in the Neuroglia Cells."——The *Revista de Medicina* of Havana notes that Prof. E. Gley, Paris, was tendered a banquet by the dean of the medical faculty and others on his visit to Havana on his way to lecture in Mexico. He spoke at Havana on "The Influence of the Thyroid on Growth," and "The Origin and Action of Epinephrin." He is to deliver a series of eight lectures on his return visit.

FOREIGN

Memorial to Grassi.—The *Riforma Medica* states that the Argentine government has donated 10,000 liras to the Grassi Institute at Rome for study of parasitic diseases.

International Climatologic Congress.—The eleventh International Congress on Hydrology and Climatology is to convene at Brussels, October 10-14. Professor Gilbert of Paris and Dr. Terwange of Brussels will preside. The main topics appointed for discussion are "Mineral Waters and Climatic Treatment of Cardiovascular Affections," and "Treatment by Sulphur Mineral Waters." The secretary of the congress is Dr. Poirot-Delpech, 3 rue de la Planche, Paris.

Personal.—Dr. E. Zarate, Buenos Aires, demonstrated his method of symphysiotomy at the Tarnier maternity, Paris, on living subjects and cadavers, and described his technic at a special meeting at the Ecole Pratique.——Dr. Oller, Madrid, was the official delegate from Spain to the recent international Congress on Occupational Accidents, at Amsterdam. He spoke on "Rehabilitation of the Disabled," with moving pictures.——The Bianchi endowment fund was collected by a nation-wide subscription on Prof. L. Bianchi's recent retirement from the chair of nervous and mental diseases at Naples. The income of the fund, it is stated, will be awarded every second year for the best publication on neuropsychopathology.

Students' Number of Journal.—The *Lancet* devotes its August 29 number to medical education, giving a résumé of the teaching facilities and courses of the medical colleges and teaching hospitals of England, Ireland, Scotland and Wales and as usual the conditions for entrance and the opportunities offered in the various government services. The General Council of Medical Education and Registration of the United Kingdom, which is the registering body, consists now of thirty-eight members under the presidency of Sir Donald MacAlister, all but eleven being official representatives of some corporate body; six of the members are elected by the medical profession as direct representatives and five are chosen by the crown.

Resolutions of Congress of Radiology.—The first International Congress of Radiology, which met in London in July, elected at the close of the congress Dr. Gösta Forssell, Stockholm, president, and passed resolutions that the next congress shall be held in Stockholm in 1928, and that further international congresses shall be held at intervals of three years; that any country having a radiologic society or societies shall be entitled to send not more than five official delegates to each congress, but that each country shall exercise only one vote, and that the country in which any congress is held shall be entirely responsible for all the arrangements of the congress, financial and otherwise, and that a sum of money not exceeding £20 shall be allotted to the secretary of delegates from the funds of each congress meeting to cover his expenses.

Deaths in Other Countries

Dr. **John F. Gordon Dill,** consulting physician to the Royal Sussex County Hospital, at Hove, England, August 22.—— Dr. **Henry Graeme Anderson,** consulting surgeon to the Royal Air Force, surgeon to St. Mark's Hospital and author of "The Medical and Surgical Aspects of Aviation," recently in London, England, aged 41.——Dr. **O. de la Camp,** professor of clinical medicine, Freiburg, aged 54.——Dr. **Anton Bum,** instructor in physical therapy, Vienna, editor of the *Vienna Medical Press* and the *Vienna Clinic*.——Dr. **R. Cassirer,** professor of nervous and mental diseases, Berlin, aged 57.—— Dr. **O. Kukula,** professor of surgery at Prague.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 5, 1925.

Annual Meeting of the British Association for the Advancement of Science

The British Association for the Advancement of Science holds a meeting every year at which recent advances in all branches of science are described by the most eminent men of the day, and then follow discussions. In the Sections of Physiology, Psychology and Anthropology many of the papers are of especial interest to physicians.

EVERY ONE A GENIUS AT SOMETHING

Dr. Spearman, Grote professor of mind in the University of London, occupied his presidential address to the Section of Psychology with an account of a curious, though still controverted, conclusion as to the nature of the human mind, drawn from the results of ability tests. Psychologists examine the respective abilities of different classes of the community, especially school children of various grades, university students, candidates for appointments, and abnormal persons, by submitting them to a series of tests and marking and codifying the results. The tests have been devised so as to be an indication of capacity rather than of knowledge, and to include a number of distinct bodily and mental factors. In its simplest form, the new theorem, Spearman said, is that every different ability of any person can be resolved into two factors, of which the one is always the same, but the other always independent. Suppose, for example, that any person undergoes a mental test and obtains seventeen marks for it. The theory asserts that this can actually be divided into two parts, say eleven and six, such that (on reduction to comparable units) the eleven recurs for this person in every other test however widely different, whereas the six is each time displaced by some other number independently. It is as if each person were endowed with a definite amount of mental energy, comparable in a rough metaphor to the horse-power of an engine, but capable of being applied to a number of different machines. In the arbitrary example taken, eleven would represent the horse-power efficiency of the engine or faculty employed in the particular test. Accepting, then, the conclusion that an immense number of abilities vary from one individual to another almost independently of one another, what is the practical result? Let us try to get a notion how such abilities of any person must be distributed in respect of excellence. By all experience, and also by statistical theory, the great bulk of his abilities will tend to be mediocre; that is to say, they will be near the general average of his class. A fair number will be distinctly above this average, and a fair number below. A small number will be much above; and so also below. The whole frequency distribution will, in fact, have a bell-like shape similar to that which is shown by the curves of the tetrad-differences to be expected from sampling errors. At the extreme ends of the distribution will lie a very small number of performances for which the person is, on the one side a genius, and on the other an idiot. Every normal man, woman and child is, then, a genius at something as well as an idiot at something. It remains to discover at what, at any rate in respect of the genius. This must be a most difficult matter, owing to the very fact that it occurs in only a minute proportion out of all possible abilities. It certainly cannot be detected by any of the testing procedures at present in current usage. But these procedures are susceptible, Spearman believes, of vast improvement.

FISH AS A SOURCE OF INSULIN

In the Section of Physiology, J. R. R. Macleod of Canada read a paper on the carbohydrate metabolism in cold-blooded animals. He said that insulin had been of inestimable value in the treatment of diabetes. It had not only prolonged life but had also greatly improved the efficiency and comfort of the patients. Its discovery had not, however, revealed the cause of the disease. Insulin showed what prevented diabetes, but we still had to find out why diabetes occurred when it was not present in the body. It furnished a key that might unlock the door to a discovery of the cause, but we did not know how the key should be turned. To expand the line of attack on this problem, the experimental station of the biologic board of Canada had made experiments on the behavior of sugar in fish. As the latter were cold blooded, the changes were much slower in the intermediate stages than they were in the case of mammals, and could be more closely followed. All fish had about the same amount of sugar in the blood as man and other mammals had, and, the amount increased under some experimental conditions. This indicated that its changes in the body must be controlled in the same way. The fish must therefore possess insulin, and it had been found that this was secreted by special glands near the gall-bladder. On the other hand, the pancreas, which was the source of insulin in mammals, did not produce it. Now these special glands, or principal islets, as they were called, had the same structure as the islands of Langerhans, thus showing that it must be because of the presence of the structure in the pancreas that the gland yielded it. When the principal islets were excised, the blood sugar increased greatly, indicating that the fish was diabetic. Insulin could be prepared very easily from the principal islets, and in countries where the cleaning of fish was done on shore this should be a profitable source of supply. The difficulties of collecting islets when the fish were gutted at sea were so great as to make this an unsuitable source of supply.

THE ANTIQUITY OF MAN

Sir W. Boyd Dawkins in a paper on the antiquity of man, read before the anthropologic section, dwelt on the impossibility of reckoning the age of man (*Homo sapiens*) in terms of years on the material at present available. He was dealing with "our noble selves" and not with those ancient types which, until recently, were regarded as our remote ancestors. The accurate measurement of the past, he said, was quite as impossible as the accurate measurement of the future. Beyond the Neolithic age in Europe was the Pleistocene or Paleolithic age, but archeologists had not realized the magnitude of the gap that existed between the two. In the Neolithic age the British Isles were distinct from Europe, with climate and wild animals not very dissimilar from those of the present; but toward the close of the Pleistocene age Great Britain formed part of the continent and the 100 fathom line swept from the Bay of Biscay northward round Ireland and Norway. It was at the beginning of the Pleistocene period that the highly organized representative of *Homo sapiens*, the Cromagnon man, the artistic hunter who lived in caves, made his appearance. This man was endowed just as we were, and could be studied today in the peasantry of France and northern Spain. Neanderthal man was more closely allied with the apes than with man as we know him; although he represented one of the "missing links" between the higher apes and man, he and others like him were distinct from the species *Homo*. This early type of the human family was the first to make its appearance in Europe, but he was not a direct ancestor of *Homo sapiens*. There was no evidence that *Homo sapiens* was "evoluted" in Europe. That

evolution probably took place in that temperate part of Asia from which for the first time the Asiatic animals migrated to Europe. Running into hundreds of thousands of years, to date the matters connected with the incoming of man were based on the assumption that the existing forces of nature were invariable. But nature's forces were not uniform; they did not do equal work in equal time; nature had no chronometers. Therefore he was unable to accept anything in terms of years as applying to anything outside the reach of history.

The Microscopic Examination of Small Bodies

Mr. J. E. Barnard, whose work in cancer research has recently attracted much attention, lectured at the physiologic section on the microscopic examination of small bodies. Filter-passing viruses, he said, were extremely small bodies —so small that they would pass through any known porcelain filter or membrane impervious to any ordinary medium. It was unsatisfactory that there was no method of standardizing filters, but work in that direction was now in progress. During the last few months, work had been done which enabled them to see bodies rather less than one-third the size previously seen by the best microscope available. He hoped that the work on which they were now engaged would make it possible to prepare a cinema film which would show the life cycle of these small organisms. Already they were able to photograph viruses magnified 3,000 diameters in one-tenth second and to make a series of such photographs in rapid succession. Later on he hoped they would be able to photograph bodies one-twentieth micron in diameter. At present they could photograph down to one-tenth micron. Even now it would be possible to prepare a cinema film of extremely small organisms, such as the anthrax bacilli, one hundred-thousandth inch in diameter. One probable development in the near future was the use of a microscope working in a vacuum, and details of such an instrument were now being worked out by the National Institute of Medical Research. This would enable them to work with rays smaller even than the ultraviolet rays. Examining a thin layer of nutrient agar, such as was used in cancer investigation, under very high power, one saw that, instead of being spread out flat, it was really a spongy material with a number of small channels running through it. Though those channels contained fluid, they were really microscopic running streams, and it was on the banks of these streams nurtured by the fluid that the virus grew. This was another example of the fact that, in science it was the little byways that often led to success. On the screen Mr. Barnard showed lantern slides of the smallest organisms that had been photographed. "We believe we are showing you that virus associated with malignant human tumor growth." One trouble was that these small organisms disintegrated quickly under the influence of the ultraviolet rays. They were now seeking a wave length that would not have that effect. The virus of cancer was the first filtrable virus that had yet been identified. There were a host of others not yet identified, including smallpox, scarlet fever, measles and whooping cough.

Postgraduate Medical Education

The minister of health has appointed a committee to draw up a practicable scheme of postgraduate medical education centered in London. The chairman of the committee is the minister of health. Among the members are Lord Dawson of Penn, physician to the London Hospital; Sir Humphry Rolleston, president of the Royal College of Physicians; Sir John Bland-Sutton, president of the Royal College of Surgeons; Sir Thomas Horder; Sir George Newman, chief medical officer of the ministry of health, and Sir George Blacker, gynecologist.

PARIS

(From Our Regular Correspondent)

Aug. 29, 1925.

The Etiology of Cancer and the Researches of Dr. Gye and J. E. Barnard

The sensation caused by Dr. Gye and J. E. Barnard has subsided. It is now time for the students of cancer to express their opinions. In a recent number of the *Presse médicale*, Professor Roussy analyzes the researches carried out by the English authors. He holds that the cause of Peyton Rous sarcoma may be an agent that can be seen, cultivated and photographed, and he expects the findings of Gye and Barnard to be confirmed; but he thinks that in their experiments on transmission of mouse sarcoma by means of a filtrate and an extract free from tumor cells the authors have not taken the possibilities of error sufficiently into account. As for the existence, in the ground filtrate, of the Peyton Rous sarcoma and in the fluid of the primary culture, of two factors, different in essence and nature, Professor Roussy is skeptical. He questions whether the virus is killed by the chloroform, as the authors assume without convincing demonstration.

The most important objection that Professor Roussy raises is: Never has an experimental argument been found tending to prove that epitheliomas are of bacterial origin. Furthermore, epitheliomas can be produced by repeated irritation; for example, painting with tar. Then, again, histology isolates frankly epithelial tumors from inflammatory processes. But it is sometimes very difficult to differentiate histologically between a sarcoma and an inflammatory lesion. Among other affections, Hodgkin's disease, of which the infectious origin seems fairly well established, has long been regarded as a sarcoma. Finally, there are the experiments with the Peyton Rous sarcoma.

The English authors were able to transmit only sarcoma; to be sure—and that is the incomprehensible part—by injecting the filtrate of an epithelioma.

While recognizing the interest of the discoveries of Dr. Gye and J. E. Barnard if they should be confirmed, Professor Roussy holds that they apply only to sarcoma, and that for epitheliomas the problem remains unsettled.

BELGIUM

(From Our Regular Correspondent)

Aug. 20, 1925.

The Anticancer Center in Brussels

The Anticancer Center of Brussels was recently dedicated. The anticancer center has now 2 grams of radium, 0.25 gm. being reserved for scientific study and 1.75 gm. for the treatment of patients. Dr. Regaud told the assembly what could be expected of radium. The prospects opened up by radium, he stated, were very great, but it would be an abuse of confidence to allow the public to think that cancer had been vanquished. He explained the present status of anticancer treatment, and pointed out that there is one form of cancer in which surgery must confess itself almost powerless but in which radium is now effecting 24 per cent. of recoveries, and that is cancer of the tongue.

Early Treatment of Syphilis

In a series of communications presented before the Société belge de dermatologie et de syphiligraphie, at the Brussels medical convention (journées médicales), Dr. Bernard discussed the troublesome question, "Can early antisyphilitic treatment neglect with impunity the rôle of immunity?" The central nervous system particularly appears to be less protected by the process of secondary immunization. There is the old question of the present greater frequency of neurorelapses. Formerly, when the patient received a drug which

did not check suddenly the growth of the spirochetes and consequently the process of immunization, neurorelapses were unknown and the accidents of the meningorelapse type did not occur. The comparative study carried out by Dr. Bernard, based on 400 cases, sixty of which could be followed in detail for from four to five years, shows that the remote results were much better for those in whom secondary immunization had become established, following which the treatment took on the nature of an adjuvant.

The International Foundation of Gynecology and Obstetrics

In connection with the international congresses of gynecology and obstetrics, which were held before the war at Geneva, Amsterdam, Rome, Leningrad and Berlin, there was established the international foundation composed of charter members and life members. This foundation had for its object the furtherance and the protection of the international congresses of gynecology and obstetrics without claiming any right to participate in their organization. It could participate in the work of all societies having the same purpose in view. The funds of that institution were to serve: (1) to pay to the various congresses of gynecology and obstetrics the dues of the charter and life members still living at the time of the holding of the several congresses, and (2) to establish a prize to be awarded at each congress to the author of a scientific work on some subject in gynecology or obstetrics and published since the holding of the previous congress. On that basis, the first prize was awarded at Berlin in 1912.

By an official act, the powers of that foundation have been transferred to the Société belge de gynécologie et d'obstétrique, whose duty it will be to administer the funds of the foundation.

The Successors of Professor Depage

The University of Brussels Faculty of Medicine has appointed the successors of Professor Depage. Professor Verhoogen will occupy the chair of clinical surgery. The second surgical clinic has been entrusted to Prof. Robert Danis. Dr. Albert Hustin is put in charge of the course in general and special surgical pathology. The selection of those eminent surgeons will be unanimously approved by the medical body.

Surgical Septicemia

At a recent meeting of the Société belge de chirurgie, Dr. Govaerts gave a complete presentation of the present knowledge on surgical septicemia from the bacteriologic, clinical and practical point of view. Experimental pathology has established the existence of stable micro-organisms that develop unhindered in the blood. It tells us also of unstable micro-organisms eliminated very rapidly from the blood but which may reappear there in the form of secondary septicemia. What is the mechanism of such reappearance? The author recalled and discussed the various theories advanced: saturation of the means of defense, augmentation of the resistance of the germs, initial elimination under the influence of an "effect of foreign proteins," the constant introduction of micro-organisms through infected tissues. The last interpretation is the one the author favors, but he regards the transmission of intraleukocytic micro-organisms as possible. In the vast majority of cases, surgical septicemia is caused by unstable micro-organisms. He has reached the conclusion that, whenever it is possible, the infected focus should be removed or at least cleansed surgically.

Vaccinotherapy

At the special meeting of the Société belge de chirurgie, Dr. De Caestecker gave an account of the accomplishments of vaccinotherapy, which, from the practical point of view, has given manifest results, particularly in localized infections, and especially in infection of the external teguments. In affections of the bones and joints, vaccinotherapy alone has effected cures in a few cases. As a general rule, it is only an adjuvant of surgical treatment, which it may sometimes retard or of which it may limit the effect. In surgical affections of the pleura, vaccinotherapy may sometimes be employed alone but should usually be combined with surgical intervention. In abdominal affections the efficacy of vaccinotherapy has not been demonstrated as yet and it is not devoid of danger. Here surgery, more than in all other affections, maintains all its rights. In septicemic conditions, vaccinotherapy is powerless. It is of value only in slightly virulent forms of subacute type or in attenuated forms of secondary septicemia. In the present state of our knowledge, vaccinotherapy is efficacious in staphylococcal affections, but much less so in streptococcal infections.

BERLIN

(From Our Regular Correspondent)

Aug. 29, 1925.

Decline in the Birth Rate of Germany in 1924

The total number of births for Germany in 1924 was 1,311,044, which represents a birth rate of 21.1 per thousand population, the lowest rate of the last five years and only 76 per cent. of the rate for 1913. For comparison, the birth rates for 1913 and the period from 1921 to 1924 are given, the present area of Germany being taken as the basis throughout:

1913	27.7
1921	26.1
1922	23.7
1923	21.7
1924	21.1

In the fourth quarter of 1924 a slight increase of the birth rate was noted, which, if we may judge from the figures reported by the large cities for the first quarter of 1925, has been maintained throughout this year, thus far.

The highest birth rates, as usual, are reported from Upper Silesia (30.2) and East Prussia (25.2). Of other sections, only Berlin offers anything peculiar. Here the birth rate has increased 7 per cent., being 11.3, which is, however, only a little more than half of the average birth rate for the whole country. In Posen-West Prussia, Hamburg, Oldenburg and Schaumburg-Lippe, the birth rate has remained almost unchanged; in other regions there has been a decline.

The excess of births over deaths in Germany has decreased during the period from 1913 to 1921 from 12.6 to 8.2 per thousand population. For comparison, the excess for the years 1913, 1923 and 1924 is given:

1913,	12.6 per thousand population
1923,	7.1 per thousand population
1924,	8.2 per thousand population

The figures for 1913 are based on the present extent of Germany's territory. In the figures for 1923 and 1924, the Saar region is not considered.

A favorable feature for 1924 is the extremely low death rate. In view of the low birth rate, the mortality rate among persons more than 1 year old is of greater influence in determining the balance between births and deaths than is the infant mortality rate. However, with the exception of 1924, the mortality of persons more than 1 year old, since the war, has not decreased to the same extent as the birth rate, and there is no prospect of its striking and maintaining a lower level for any length of time. As usual, the excess of births over deaths was exceptionally high in 1924 in Upper Silesia (15.0) and Westphalia (13.5). In Berlin, as in 1922 and 1923, there was in 1924 an excess of deaths over births amounting to 1.5 per thousand population.

A preliminary report gives these figures for the total number of births for Bavaria:

1913	207,457
1923	177,943
1924	171,951

The excess of births over deaths in Bavaria shows considerable improvement over 1923, as does Germany as a whole. The excess for the years 1913, 1923 and 1924 is given:

1913	81,321
1923	61,417
1924	67,496

The increase in 1924 was favorably influenced by the decline in mortality, which was due mainly to lower infant mortality. This reduction in infant mortality may be ascribed partly to the decline in the birth rate and partly to the better nutrition and better care of infants as the result of public and private welfare work.

An illustration of the effect on school attendance of the decline in the birth rate is found in a report from Munich comparing the attendance in 1914 with that of 1924:

1914, 1,548 classes with 75,961 pupils
1924, 1,361 classes with 50,827 pupils

The decline in birth rate and decrease in the excess of births over deaths since 1914 are due mainly to the war. Bad economic conditions and poor housing facilities have likewise discouraged assumption of the responsibilities of the marriage relation.

In 1924, 440,071 marriages were contracted in Germany (exclusive of the Saar region), a decrease of 141,206 as compared with 1923 and of 22,673 as against 1913. The percentage of marriages to 1,000 of population in recent years is as follows:

1913	7.8
1921	11.8
1922	11.1
1923	9.4
1924	7.1

Hamburg, in which the number of new dwellings erected in 1922 and 1923 was more than three times as great proportionately as the number erected in Berlin, showed during the last two years a 27 per cent. increase of marriages over the prewar period, whereas Berlin presented a decrease of 7 per cent.

Results of the Census in Saxony

The population of Saxony in June, 1925, was 4,970,301, which denotes an increase of 163,640, or 3.4 per cent., since the last census of 1910. Changes in the relationship of the sexes may be seen by these figures:

	1910	1919	1925
No. of males	2,323,903	2,168,065	2,361,740
No. of females	2,482,758	2,495,233	2,608,561
Total	4,860,661	4,663,298	4,970,301

From 1910 to 1925, the male population increased only by 37,837, or 1.63 per cent., whereas the female population was augmented by 125,803, or 5.07 per cent.

This preliminary report shows, on June 16, 1925, 110 females to 100 males. In 1910, there were 107 and in 1919, 115 females to 100 males. Shortly after the close of the war, as a result of the war losses (about 138,000 men) and the absence in military prisons of 31,000 men, there was a high relative excess of females. This has fallen off considerably, mainly because fewer men than women have died since the war, while the number of male and female births each year has been approximately equal. Another factor in connection with the decrease of the excess of women is that, during the first years after the war the excess of male births each year was greater than in normal times. It appears also that, since 1919, the number of immigrants to Saxony has been greater than the number of emigrants, and, furthermore, that the balance thus gained favored the male population more than the female. More than half of the total population—namely, 2,635,062, or 53 per cent.—is found in towns and cities of more than 10,000 inhabitants. In other words, in the fifty most populous communes there are more persons than in the remaining 2,925 communes of Saxony.

BUDAPEST

(From Our Regular Correspondent)

Aug. 25, 1925.

Tabes, Paralysis and Syphilis

The neurologic and psychiatric clinic of Budapest University has studied the newer methods in the diagnosis and treatment of locomotor ataxia and progressive paralysis. In fact, they were the first on the continent—excepting, of course, the Vienna clinic, where the malaria treatment of paralysis originated—to make extensive inoculation of paralytic patients with malaria plasmodia. They obtained remarkable improvement in some cases and, in a few, recovery. Dr. Hugo Richter, lecturer on psychiatry, addressed the medical society on the relation of tabes and paralysis to syphilis. The address may be thus summarized:

TIME OF NERVE INVOLVEMENT

Syphilitic diseases of the nervous system usually do not occur in the early stages of infection, so that the assumption that the spirochetes settle in the nervous system at a relatively late stage of the infection seems justified. Examinations of the spinal fluid, however, lead to quite different results. Generally persons infected show a positive Wassermann reaction of the spinal fluid in the early secondary stage; in some instances even before the appearance of the general skin manifestations. Albumin and colloid reactions also bear out the fact that the spirochetes could already be present in the nervous system without this being manifested in the clinical picture. Knowledge of this early infection of the spinal fluid is significant from the point of view of prognosis of the syphilitic process. It is true, though, that not every one of the 40 per cent. of patients who displayed an early spinal fluid syphilis developed a syphilitic nervous disorder later. On the other hand, it is highly probable that the sufferers from later nervous disorders originate from this group. Therefore, if we find exaggerated or impossible the demand of some therapeutists, that antisyphilitic treatment be continued in these cases until the full clearing up of the spinal fluid, it is, at any rate, justifiable to control these subjects in greater measure neurologically.

DIAGNOSIS

As a diagnostic method, examination of the spinal fluid has not yet attained the importance it deserves. Recent progress bids fair that by its aid the various syphilitic nervous diseases may be differentiated. Therefore, we must not refrain from its application on account of the transient meningeal reactions that follow lumbar puncture. It is through spinal fluid analyses that the question of these so-called neurorelapses has been wholly cleared up. The experience that, in the course of antisyphilitic treatment, particularly since the use of arsphenamin, injury to cerebral nerves (acusticus, facialis), occurred, favored the conception that we had to deal with the injurious effects of the antisyphilitic drug and chiefly of arsphenamin. Today we know that this view was erroneous, as these injuries were merely the reactive

flaring up of the local syphilitic focus. These bad effects recede on the application of energetic treatment.

DEVELOPMENT OF THE DISEASE

Most significant are the results of the latest research on the pathogenesis of tabes and paralysis. Sixty years ago, such investigators as Virchow and Leyden denied the connection of tabes and paralysis with syphilis. As with other chronic nervous disorders, here also trauma, colds, sexual and alcoholic excesses and mineral poisons were regarded as etiologic factors. The thorough clinical researches of Erb and Fournier have brought the possibility of their connection with syphilis into medical consciousness. The Wassermann reaction has definitely cleared up this question, showing that the spinal fluid of paralytic patients was positive in 100 per cent. of the cases. The discovery of the spirochetes in 1905 by Schaudinn and Hoffmann did not mean any great progress in this domain because the demonstration of spirochetes in patients suffering from tabes and paralysis was unsuccessful. It was not until 1913 that Noguchi found great masses of spirochetes in the cerebral cortex, in one fourth of the cases. Later on, other authors could exhibit spirochetes in more than 90 per cent. in the crumbled pieces of brain from persons who died in paralytic fits. Most valuable, however, were the researches of Jahnel, who established the presence of spirochetes in the cerebral cortex and also their relation to tissue changes. He has shown that the spirochetes are present in the cortex in the foci around the blood vessels, and also in the parenchyma of the brain itself. In some of Jahnel's preparations, millions of spirochetes in such foci were evidenced by small black patches, recognizable with the naked eye. The lecturer, Dr. Richter, too, has found peculiarities in the pathologicohistologic picture of tabes which differentiate it from the rest of syphilitic spinal diseases. His findings were confirmed by Jakob and Verga. Recently Dr. Otto Mayer has recognized the pathologicohistologic basis of tabetic acusticus lesions. On the ground of these findings he had to explain the pathogenesis of tabes in a way different from the hitherto accepted explanations, at the same time placing the relation of tabes with paralysis in a new light. It was shown, namely, that tabes, properly, is not a disease of the central nervous system. Every single attacking point of the tabetic affection from the opticus down to the last sacral root lies in the subarachnoid space. The content of this, the cerebrospinal fluid, connects the attacking points with one another, mediates the spread of the process from one root to another, and also to the cerebral nerves, and thereby unites the affections going on at different points into one process. The histologic changes and the discovery of spirochetes at the site of the lesion prove that we have to deal with a process dependent on spirochetal action; that it is a true syphilitic process which does not differ at all from other interstitial syphilitic processes in other parts of the body. Therefore, tabes is an extracerebral, extraspinal process, while the central nervous system (the posteria fasciculi of the spinal cord) shows secondary degeneration only. In opposition to this progressive paralysis is an intracerebral process, which, perhaps, could rather be called the spirochetosis of the cerebral cortex. The knowledge of this fact is important not only from the point of view of diagnosis, but also from that of therapeutics.

TREATMENT

Does our etiologic and pathologicohistologic knowledge enlighten us regarding the curability of tabes? Dr. Richter believes that it does. The etiologic essential of tabes is spirochetosis of the subarachnoid space. The early appearing spirochetes may settle in the spinal roots, under conditions hitherto not clear, and start a syphilitic tissue process, which, spreading to the nerves, destroys them in a progressive manner. That tabes begins from syphilitic infection of the spinal fluid is borne out by the results of spinal fluid analyses, which show that the spinal fluid may give positive reactions in many cases in which the Wassermann reaction of the blood is negative. From this fact it could be concluded that we had to direct antisyphilitic treatment, in the first place, against the spinal fluid syphilis; that is to say, to administer endolumbar treatment. We know, however, that this treatment does not prove efficacious enough either with tabes or with other syphilitic nervous disorders, because the hitherto known antisyphilitic drugs are strongly neurotropic, which in a relatively weak concentration cause toxic symptoms. We cannot employ more than 2 mg. of arsphenamin endolumbally without the risk of poisoning, while we are able to introduce into the spinal fluid much larger doses by intravenous or intramuscular treatment. Thus we can insure superiority of the latter over endolumbar administration. Those who have thus treated early cases of tabes are assured of the great improvements that follow. But advanced cases have to be treated as well. We have to be clear, however, as to what we may expect from treatment in a given case. In the most favorable cases we can hope for stoppage of the process. Those who have seen the histologic picture of a tabetic nerve root cannot hope that the destroyed nerve roots may ever function. Therefore, the cure of tabes can be expected only in early cases. It is a medical crime to neglect treatment in these cases.

Quite different is the lack of success in treating paralysis. In paralytic patients, besides 100 per cent. strongly positive spinal fluid reactions, the blood serum shows a strongly positive reaction. The spirochetes are found in the cortex in great masses such as are found in the liver of syphilitic fetuses, and the spirochetes form huge foci around the blood vessels. Besides these we generally find severe pathologic changes in other parts of the organism. And when we find that, against this powerful invasion of spirochetes, which, to a certain extent, seems accessible to antisyphilitic drugs introduced through the blood stream, antisyphilitic treatment is without avail, we must believe that in paralysis some changes have taken place in the relation of spirochetes and the organism, which sharply differentiates paralysis from other syphilitic diseases.

SPIROCHETES OF PARALYSIS

The hypotheses that deal with the relation of the paralytic organism and the spirochetes can be divided into two groups. The first group attributes the pathology to the peculiarity of the spirochetes, to a special strain of spirochete or to an involution form of the spirochete. The other group identifies paralytic spirochetes with the usual pathogenic bacteria of syphilis, but attributes the spirochete excess and the failure of treatment to biologic changes in the attacked organism, and decrease of immune bodies. Numerous data corroborate the statement that there is a special spirochete strain toward which the nervous system shows increased sensibility, the "neurotropic" spirochete. Adherents of this theory are Brosius, Morel La-Valle and Schultz, whose cases afford evidence that many individuals having acquired the infection from a common source have developed only paralysis or tabes or other syphilitic nervous diseases. A majority of noted syphilologists hold that infections originating from a common source may provoke some mild and some severe cases and that a malign case as source of infection may cause some very mild and some very severe infections. As with all diseases of microbic origin, much depends on the settling place of the microbe; and if we ask why only a certain percentage of syphilitic patients become paralytic we might also ask why only a fraction of tuberculous patients fall ill with meningitis.

For the time being we are justified in drawing the conclusion, not so much from evidence as by exclusion, that the condition of the patient decides whether or not he will develop paralysis. The failure of antisyphilitic treatment seems to indicate that in paralytic patients the protective capacity of the organism is wanting or decreased. That this factor has great importance in the development of paralysis is proved by the encouraging results from fever therapy.

FEVER THERAPY

Experience proved superior to theory here. Restless, excited paralytic patients used to incur bodily injuries, and the suppuration of these wounds caused fever. Even older psychiatrists were surprised at the amelioration of the patients' condition after the passing of the fever. Fifty years ago, researches were made to produce fever artificially. Let us recall the period of Autenrieth ointment and the "Haarseil" method, causing a phlegmon by pulling a hair through the skin of the patient. The same thought induced certain authors to administer nuclein injections, which with the concomitant fever, together with the setting in of leukocytosis, played rôles in the cure. Wagner von Jauregg of Vienna has provoked fever by the application of toxins, and in recent times has inoculated his patients with malaria, achieving notable results. It would be too early to arrive at conclusions regarding the actual value of this method, the more so as leading clinics have failed to achieve results even approaching those of Wagner von Jauregg. So much is certain, that at present fever therapy is the only therapeutic method giving appreciable results. Our fears concerning the use of this method arise from those cases ending unfavorably, in which the heart could not survive the malarial infection.

There was no disappearance of bodily symptoms, nor even their improvement. But this could not be expected because of the destruction of nerve elements, as in tabes. Judgment of the value of the malaria treatment, taking into account its risks and dangers, raises the question as to how much more it offers than other methods apt likewise to cause fever. I may mention here milk injections, which are likewise apt to cause fever in corresponding dosage. The great advantage of milk injections is that we can control the effect through the dosage and we can avert the risks of microbic methods. When fever therapy is employed, it must be combined with antisyphilitic treatment, the more so because, with the promotion of fever, we have restored that favorable *milieu* in which mercury, bismuth or arsphenamin is more likely to exert its spirochete-killing property.

Marriages

JOHN H. HERRING, Eau Claire, Mich., to Miss Vera M. Wariner of Detroit, at Benton Harbor, August 7.

JAMES FRANCIS RICE to Miss Grace M. Easterly, both of Buffalo, N. Y., at Watertown, August 25.

MURRAY MAXWELL LEVINE, Cleveland, to Miss Dorothy Mandell Tietz of Cincinnati, June 9.

ADAM ISBISTER REYNOLDS, Detroit, to Miss Olivine Ethel Apps of Brantford, Ont., July 22.

JOHN P. PRIOLETTI, New Castle, Pa., to Miss Ada Nerone of Youngstown, Ohio, August 6.

JOHN H. MOORE to Miss Dorothea McBride, both of Victoria, B. C., Canada, June 1.

JOHN F. RUNNELS, Chicago, to Mrs. Emma Armstrong of Fort Wayne, Ind., recently.

CECIL E. PALMORE to Miss Ormal Klapp, both of Paintsville, Ky., August 21.

MAXIMILIAN MORGEN to Miss Yvette Gordon, both of New York, June 16.

ELI A. MILLER to Miss Mayme Rosenberg, both of Denver, June 7.

Deaths

Ephraim MacDonald Ewing, Napoleonville, La.; University and Bellevue Hospital Medical College, New York, 1918; member of the Louisiana State Medical Society; formerly assistant professor of physiology at the Tulane University of Louisiana School of Medicine, New Orleans; aged 37; died, August 27, at a sanatorium in Asheville, N. C., of heart disease.

Franklin Cady Vandervort ✦ Bloomington, Ill.; Rush Medical College, Chicago, 1881; for three years president of the McLean County Medical Society; formerly county physician and city health officer; member and at one time president of the board of education; aged 67; died, August 29, as a result of a streptococcus infection.

John I. Suby, Stoughton, Wis.; Central College of Physicians and Surgeons, Indianapolis, 1900; for six years member of the board of education; at one time city health officer; formerly member and president of the city council; aged 52; died, August 29, of carcinoma of the stomach.

Arthur Jenkins, Harlan, Ky.; University of Louisville School of Medicine, 1891; member of the Kentucky State Medical Association; aged 54; died, September 3, at St. Joseph's Hospital, Lexington, of pneumonia and heart disease.

William A. Bristol, Clayton, N. M.; Louisville (Ky.) Medical College, 1893; member of the New Mexico Medical Society; president of the Union County Medical Society; formerly county health officer; aged 65; died, August 1.

William Haughton Murray ✦ Plainfield, N. J.; Medical Department of Columbia College, New York, 1881; on the staff of the Muhlenberg Hospital; member of the board of health; aged 67; died, September 1, of heart disease.

Arthur C. Rumery ✦ Mason City, Neb.; University of Nebraska College of Medicine, Omaha, 1905; member of the Nebraska Academy of Ophthalmology and Oto-Laryngology; aged 46; died, August 25, of heart disease.

John Joseph Flynn ✦ Brooklyn; Fordham University School of Medicine, New York, 1913; served in the M. C., U. S. Army, during the World War; aged 33; died, September 1, at the Plaza Hospital, New York.

Charles Basil Cowan ✦ Seattle; University of Western Ontario Medical School, London, Ont., Canada, 1899; served in the M. C., U. S. Army, during the World War; aged 47; died, August 23, of myocarditis.

Frank E. Brigham, Salmon Falls, N. H.; Medical Department of Columbia College, New York, 1877; member of the New Hampshire Medical Society; aged 77; died, August 28, at the Hayes Hospital, Dover.

James Thomas Eidson, Coffeeville, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1894; member of the Medical Association of the State of Alabama; aged 61; died, in June, of nephritis.

Delbert B. Hartinger ✦ Middleport, Ohio; College of Physicians and Surgeons, Baltimore, 1894; Spanish-American War veteran; aged 53; died, September 1, of a bullet wound, presumably self-inflicted.

Frank B. Waits, Shreveport, La.; Memphis Hospital Medical College, 1906; member of the Louisiana State Medical Society; aged 44; died, September 2, of a bullet wound presumably self-inflicted.

Samuel Carpenter Muir, Bardstown, Ky.; University of Louisville School of Medicine, 1896; member of the Kentucky State Medical Association; aged 63; died, August 26, of heart disease.

Elisha B. Hendrix, Reedy River Factory, S. C.; Kentucky School of Medicine, Louisville, 1887; member of the South Carolina Medical Association; aged 62; died suddenly, August 30.

Horace Ellery Happel ✦ St. Louis; Jefferson Medical College of Philadelphia, 1910; member of the Association of Surgeons of St. Louis; aged 41; died, August 31, of septicemia.

George A. Hartman ✦ Baltimore; Washington University School of Medicine, Baltimore, 1872; on the staff of St. Agnes' Hospital; aged 74; died, September 2, of heart disease.

Eugene L. Rice, Otterville, Mo.; Eclectic Medical Institute, Cincinnati, 1881; member of the Missouri State Medical Association; also a pharmacist; aged 66; died, August 26.

Albert John Irwin, Goshen, Ind.; Chicago Medical College, 1878; member of the Indiana State Medical Association; aged 69; was drowned, August 30, in Lake Wawasee.

Charles O. Watson, Smithfield, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1897; member of the Illinois State Medical Society; aged 55; died, September 2.

Anna F. Lawrence, Louisville, Ky.; New England Female Medical College, Boston, 1873; member of the Kentucky State Medical Association; aged 72; died, September 3.

Joseph D. Maynard, Abbeville, Ga.; Atlanta Medical College, 1883; formerly member of the state legislature; aged 64; died, August 29, following a long illness.

George Louis Koch ✠ Kansas City, Mo.; Missouri Medical College, St. Louis, 1891; aged 57; died, September 2, of injuries received in an automobile accident.

Joseph Allen Perisho, Cache, Okla.; Miami Medical College, Cincinnati, 1891; member of the Oklahoma State Medical Association; aged 62; died, August 24.

Dee Cravens McPherson, Ellsinore, Mo.; Barnes Medical College, St. Louis, 1893; aged 74; died, August 1, at Hillsboro, Texas, following a long illness.

Charles Paul Sampsell, Evanston, Ill.; Jefferson Medical College of Philadelphia, 1888; aged 68; died, August 20, of chronic nephritis and heart disease.

John P. Burke, California, Mo.; St. Louis Medical College, 1878; member of the Missouri State Medical Association; aged 67; died suddenly, August 31.

Wesley Shropshire Neal ✠ Mercedes, Texas; University of Texas Department of Medicine, Galveston, 1899; aged 54; died, August 8, of angina pectoris.

John Louis Butsch ✠ Buffalo, N. Y.; Johns Hopkins University Medical Department, Baltimore, 1912; aged 48; died, September 6, of pernicious anemia.

Berton Osburne Wire, Grundy, Va.; Medical College of Virginia, Richmond, 1915; aged 33; died, in August, of injuries received in an accident.

McKendrie Zadok McKibben, Wilkesville, Ohio; Ohio Medical University, Columbus, 1900; aged 53; died, August 24, following a long illness.

Perry Lewis Nichols, Savannah, Mo.; University of South Medical Department, Sewanee, Tenn., 1901; aged 62; died, August 29, of heart disease.

Valentine de Saumarez Duke, Victoria, B. C., Canada; L.P.C.S., Ireland, L.R.C.P., Ireland, L.K.Q.C.P., Ireland, 1868; aged 77; died, July 22.

Truman Auge, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1892; aged 53; died, August 30, of heart disease.

Charles Albert Bouchard, Trois Rivieres, Que.; University of Montreal Medical Faculty, 1909; aged 37; died, June 4, of heart disease.

John Alexander Williams, Omaha; St. Louis College of Physicians and Surgeons, 1884; aged 67; died, August 28, of heart disease.

Bert G. Stockman ✠ Woodville, Wis.; University of Minnesota Medical School, Minneapolis, 1896; aged 53; died, September 1.

William Houston Shelton, Los Angeles; College of Physicians and Surgeons, Keokuk, Iowa, 1861; aged 91; died, August 23.

James T. Nance, Dallas, Texas (licensed, Texas, by the Act of 1907); aged 52; died, August 23, at a local hospital.

James William Moore ✠ Carlisle, Ohio; Medical College of Ohio, Cincinnati, 1897; aged 67; died, August 22.

Charles Ferchland, Brooklyn; (licensed, New York, 1869); aged 77; died, August 24, at the Norwegian Hospital.

H. A. Longino, Magnolia, Ark.; Missouri Medical College, St. Louis, 1880; aged 66; died suddenly, August 28.

Charles B. Petrie, New York; Kentucky School of Medicine, Louisville, 1889; aged 62; died, September 6.

George H. Kobler, Philadelphia; Jefferson Medical College of Philadelphia, 1877; aged 74; died, August 21.

John Wesley Carter, Kansas City, Mo.; Kansas City Medical College, 1898; aged 72; died, August 27.

Charles F. Lusk, Lebo, Kan.; Rush Medical College, Chicago, 1884; aged 69; died, August 24.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

THE AMERICAN ASSOCIATION FOR MEDICO-PHYSICAL RESEARCH

Another Society Catering to the Twilight Zone of Professionalism

The American Association for Medico-Physical Research holds what is claimed to be its fourteenth annual convention in Chicago, Sept. 21 to 26, 1925. From this it would appear that the organization has been in existence fourteen years. Little seems to have been heard of it—at least under this name—until three years ago when, in 1922, it held what was alleged to be its tenth annual convention, also in Chicago. At that time the Albert Abrams fakery was at its zenith and no small amount of time was devoted to the "Electronic Reactions of Abrams." Various Abrams disciples appeared on the program and also the high priest of the cult himself.

The American Association for Medico-Physical Research was organized in 1911 by the outstanding quack of the century—Albert Abrams. It was originally called "The American Association for Spondylotherapy." Those who are familiar with contemporary quasi-medicine will remember that Spondylotherapy was a cult created by Abrams before he went into his so-called "Electronic Reactions" which brought him so much notoriety and allowed him to die a millionaire. Spondylotherapy was an attempt to make chiropractic and osteopathy respectable, Abrams at that time being convinced that manipulation of the spine was the shortest way to rescue the patient from suffering and the doctor from poverty. It was later that he turned the patient over and decided that the abdomen offered a more fertile field.

A study of the last four annual programs indicates that the American Association for Medico-Physical Research might be expected to sponsor every physio-therapy fad from the Abrams cult up—or down.

According to the "Constitution" of the organization, there are three classes of members, Fellows, Associates and Honorary Members. The qualifications for Fellowship are, according to the constitution, graduation from a recognized medical college, legal qualification to practice medicine and surgery and membership "in good standing with their local or national medical society." If the latter means the American Medical Association and its component branches, then a study of the programs and publications of this organization indicates that these alleged qualifications are to be taken only in a Pickwickian sense.

No better way of permitting physicians to evaluate the scientific status of the American Association for Medico-Physical Research can be given than to give as briefly as possible what THE JOURNAL'S files show regarding certain individuals who are on the "Scientific program" for the coming meeting.

FRANCIS A. CAVE, "M.D.," D.O., Boston.—Although the program of the American Association for Medico-Physical Research gives Francis A. Cave the degree of "M.D.," our records fail to show that Cave was ever graduated by any reputable medical college or licensed as a doctor of medicine in any state in the Union. Cave has been one of the most active of Abrams' disciples and according to Abrams himself leased no fewer than fifteen "Oscilloclasts." Incidentally, Boston seems to have been a happy stamping ground for the Abrams hocus-pocus possibly because it is headquarters of the Eddyite organization. Cave's name appears as one of the honorary vice-presidents of the "Medical Liberty League," a Massachusetts organization that is devoted to anti-vivisection activities, and otherwise opposes scientific medicine. Cave seems to have received a diploma from the Massachusetts Osteopathic School in 1903 and the Massachusetts authorities

state that although this school at that time graduated students with the degree of "D.O.," it had no legal right to do so. As a result, Cave is registered by the Massachusetts Board of Registration as a non-graduate.

GEORGE S. FODEN, M.D., Detroit, Mich.—Dr. Foden, according to the program, is "Chairman" of the "Section on Medical Radiology." He seems to have appeared on the program of another twilight zone society that was dealt with a few years ago in this department of THE JOURNAL, the "Allied Medical Associations of America." His subject was "The Eye as an Index Factor to Personality." An article credited to him appeared in *The Journal of the Allied Medical Associations.* It was a rambling and disjointed panegyric on "The Electronic Reactions of Abrams" and was later published in one of the house organs of the Abrams cult called *Progress.* Dr. Foden is not a Member or a Fellow of the American Medical Association.

ALBERT C. GEYSER, M.D., New York City.—According to the program, Dr. Geyser contributes a paper entitled "What I Saw in Europe This Summer." We don't know just what Dr. Geyser saw in Europe, but we know what any one who goes to New York can see regarding Dr. Geyser. Dr. Geyser, it seems, is the alleged inventor of what is known as the "Tricho System" which is being successfully pushed in a financial way by the "Tricho Sales Corporation." The Tricho System is a method of removing superfluous hair by means of the x-ray. Agents are appointed in various parts of the country and the advertising of some of these agencies is reminiscent of "patent medicine" exploitation. It is not necessary to tell physicians how serious a menace the use of the x-ray in removing superfluous hair may be. THE

Superfluous
HAIR
Gone Forever
Money back if hair ever returns
TRICHO RAY (perfected by the noted Dr. Albert C. Geyser, Roentgenologist and Professor of Electro-Therapeutics at Cornell University, and Chief of Clinic at New York Polyclinic Hospital) is the only method known to science which will remove hair permanently.
Free booklet mailed, or private appointment with Dr. Wm. Hoppman, at
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Suite 1010 State-Lake Bldg.
190 N. State St. Central 5013

JOURNAL is collecting reports of cases of pre-cancerous keratoses that are developing in women who have been foolish enough to subject themselves to this method of removing superfluous hair. In due time the matter will be published. Dr. Albert C. Geyser is not a Member or a Fellow of the American Medical Association.

WILLIAM HOWARD HAY, M.D., Buffalo.—Dr. Hay, it seems, is "chairman" of the "Section on Advanced Medicine." Dr. Hay will be remembered by those who read the article published in this department a few weeks ago on the "Defensive Diet League of America" as a member of the "Medical Advisory Board" of that egregious organization. He seems to have practiced in Youngsville, and Corry, Pa., going to Buffalo, apparently, early in 1921. A newspaper clipping from a Corry, Pa., paper of August, 1918, reported that the "Hay Rest Cure" operated by Dr. W. H. Hay had introduced "a special service department for the cure of hay fever cases." In 1916 a physician had written stating that Dr. Hay who was operating the Hay Rest Cure Sanitarium at Youngsville, Pa., had a "diabetic cure." The American Medical Liberty League, an organization with "patent medicine" affiliations and that is opposed to scientific medicine, publishes two articles credited to William Howard Hay and distributes them at 30 cents and 50 cents a hundred, respectively. Dr. Hay seems to have written somewhat extensively for the Defensive Diet League "bulletins," telling of his success in the treatment of various conditions by his own peculiar methods. Dr. Hay is a member of his local medical society.

OSCAR JONES, M.D., Indianapolis.—Dr. Jones has for some time been a disciple of Albert Abrams and in summing up his scientific achievements, we cannot do better than repeat

"PROOF THAT CANCER CAN BE CURED"
Send for this valuable book. It is FREE. Write today. [illegible] DANGEROUS.
(DR. OSCAR JONES, Suite 42 [illegible] Ind.

what we published in an article published two or three years ago dealing with the Abrams fakery. Dr. Jones for many years has been in the "cancer cure" business and has advertised "Cancer, My Cure is Guaranteed." While running his "medical non-surgical treatment of cancer" he also seems to have been connected with the "Medilation Co."—a medical, non-surgical treatment of piles, claiming to cure nine out of every ten patients that he accepted. Dr. Jones' name also appears as an officer in the "Allied Medical Associations of America." Dr. Jones is not, of course, either a Member or a Fellow of the American Medical Association.

GUY BECKLEY STEARNS, M.D., New York City.—Dr. Stearns is on the program to discuss "Boyd and His Emanometer" especially as regards the work of Boyd in relation to the selection of homeopathic remedies. Dr. Stearns was the "Chairman" of the committee of the "International Hahnemannian Association" which purported to investigate the E.R.A. As the committee was largely made up of Abrams enthusiasts or disciples its report, needless to say, was entirely favorable to the Abrams cult. The American Institute of Homeopathy, which represents the conservative and responsible members of homeopathic medicine, excoriated the report. Of course, Dr. Stearns is not a Member or a Fellow of the American Medical Association.

GEORGE E. HARTER, Toledo, Ohio.—Mr. Harter is on the program "By invitation" to discuss "Food Selection and Combination." Mr. Harter is further described in the program as "Founder and Director of the Defensive Diet League of America." As was brought out in THE JOURNAL'S article on the "League" a few weeks ago, Mr. Harter is connected with a dental supply house and is the manager of a commercial dental journal known as *The Dental Summary* published by the supply house of which Harter is part owner. His present scheme, through his "League," is that of teaching a peculiar brand of dietetics to dentists. Mr. Harter's knowledge of the science of nutrition is so vague that he seems unable to distinguish between scientific work done by such men as McCollum and the fads or quackeries expounded by Tilden of Denver, Harry Ellington Brook, the mail-order quack of Los Angeles, and C. S. Carr, another mail-order quack who was connected with the Peruna concern. According to Harter's conception of pathology, a child that is suffering from diphtheria has merely been eating wrongly and an individual who has acquired a chancre is paying the penalty of dietetic error. Table salt, according to Harter, will cause impotence, while sauerkraut will cure malaria. Harter also has the theory that "combinations of starches are bad" while "combinations of starches and proteins are as bad or worse." Further he warns that no fruit should be eaten with starches; under no circumstances should cereal foods be eaten at the morning meal. This is the gentleman

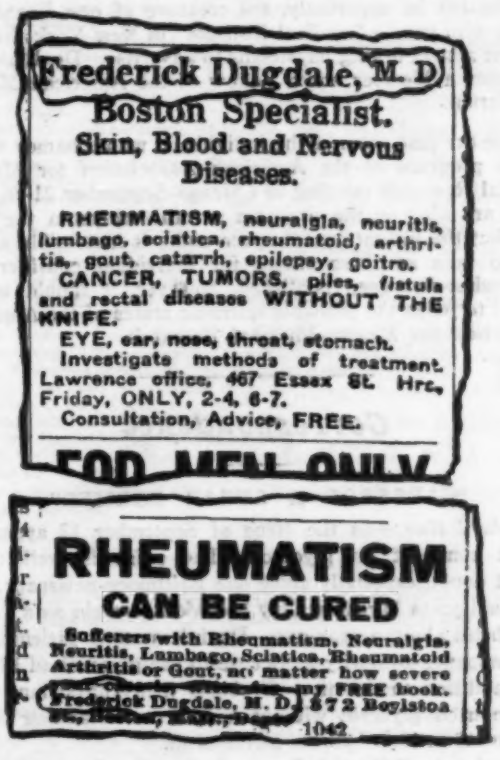
who is on the program of the American Association for Medico-Physical Research to discuss diet in its relation to health and disease.

WILLIAM F. KOCH, M.D., Detroit, Mich.—It is entirely fitting that William F. Koch should appear in this galaxy of notables to present his interesting theory of how to cure cancer. Koch's cancer remedy has been discussed at various times in THE JOURNAL and it is unnecessary at this time to go into the matter further than to say that it has never in any sense been established as either scientific or reliable. Koch is neither a Member nor a Fellow of the American Medical Association.

A. J. PACINI, "M.D.," Chicago.—This gentleman, who is connected with a concern that sells physiotherapy apparatus, is to discuss ("By invitation") "Some Physiotherapeutic Principles." Although the program of the American Association of Medico-Physical Research gives Mr. Pacini the degree of "M.D." and, although he himself claims it, most careful search has failed to disclose that any one of this name was ever graduated by a reputable college in the U. S. or was licensed to practice medicine in any state in the Union. Repeated requests made to Mr. Pacini during the past two or three years for information regarding his alleged graduation in medicine have failed to bring any information on the point. According to information received Pacini has claimed to be graduated by the University of New York in 1905 and by the University of Tennessee in 1910 with the degrees of Ph.C. and M.D. We have been unable to verify either claim. According to the officials, A. J. Pacini was never enrolled as a student in the University of Tennessee nor graduated from that institution. He was engaged as an instructor in the University of Tennessee until it was discovered that some of his claims regarding his educational qualifications were false and his services with the University of Tennessee were severed during the middle of the school term. Pacini, in a letter to the American Medical Association regarding his graduation in medicine, claims to have been graduated under an assumed name in 1909 and he declares that he does not wish to divulge his reason for having assumed a name. He was told that the American Medical Association has not the slightest interest in why he assumed a name but it is interested in knowing what name he assumed and when and from what school he was graduated.

MEL R. WAGGONER, M.D., Cedar Rapids, Iowa.—Dr. Waggoner seems to have appeared on the program of this organization for at least three consecutive years. For some time he has been going about the country giving alleged lecture courses in electrotherapy. His "lecture courses" seemed to be backed by at least two electrical apparatus concerns, that of McIntosh and H. G. Fischer. He also has "lectured" under the auspices of I. W. Long, who has sponsored courses by such individuals as Abrams, George Starr White and others of similar type. Just what special qualifications Dr. Waggoner has for teaching electrotherapeutics is not quite clear. A book that he has written on the subject, published by the McIntosh Electrical Corporation in 1923, was reviewed in THE JOURNAL Nov. 10, 1923, and was severely criticized. The review brought out that several statements in Waggoner's book under the discussion on the eye would, if true, put all text-books on diseases of the eye in the discard. Dr. Waggoner wrote of the "very good results" that might have been obtained "in the way of clearing up cataracts" that are "not too far advanced" by means of a technic which included diathermy and sinusoidal currents. In his book Dr. Waggoner also called attention to an apparatus of which he was the inventor, called the "Pelvicmultimode." The apparatus, it seemed, was designed by him so that "all of the various physical methods which have been proved of definite benefit in pelvic disease, may be combined and applied at one and the same time." With this machine and the various electrical currents it seems Dr. Waggoner treats all diseases of the pelvis and the lower abdomen; from acute anterior urethritis through chronic gonorrhea, impotence, prostatitis, nephritis and sciatica. Not only this, but, according to Waggoner, "the Pelvicmultimode has repeatedly proved to be a wonderful aid in acute and chronic Bright's disease, recovering cases which would have succumbed otherwise." One of the latest letters sent out advertising Waggoner's course is on the stationery of "The Waggoner Clinic and Lecture Course," 1664 N. Claremont Ave., Chicago. The letter purports to come "From the Office of the Secretary." Investigation proved that 1664 N. Claremont Ave. is really 2335 Wabansia Ave., the address of H. G. Fischer & Co., which sells electrical apparatus. Dr. Waggoner is a Member and a Fellow of the American Medical Association. He is on the program of the American Association for Medico-Physical Research to conduct a "Tonsil Clinic."

FREDERICK DUGDALE, M.D., Boston.—Dr. Dugdale's present activities seem to be largely concerned with the exploitation of the Koch cancer cure. Two or three years ago, when there were large economic possibilities in Abrams' fakery, Dugdale was one of the disciples of that cult, being, according to Abrams, the lessee of an "Oscilloclast." Prior to that he long advertised as a "Specialist in Rheumatism, Cancer, Chronic Blood and Nervous Diseases." Dr. Dugdale's name


Frederick Dugdale, M. D.
Boston Specialist.
Skin, Blood and Nervous Diseases.
RHEUMATISM, neuralgia, neuritis, lumbago, sciatica, rheumatoid, arthritis, gout, catarrh, epilepsy, goitre.
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1042

also appears as "President" of the "Allied Medical Associations of America" for 1921-22 and as one of the 1919 officers of the "Medical Society of the United States," an organization founded by Ohmann-Dumesnil and Emory Lanphear, originally brought into existence to organize fee-splitters but later described as "a Society of Protest Against the Autocracy of the A. M. A." Dr. Dugdale is neither a Member nor a Fellow of the American Medical Association.

E. M. PERDUE, M.D., Kansas City, Mo.—Dr. Perdue is "chairman" of the "Section on Cancer" and is to tell "How to Kill Cancerous Tumor" by "Deacquification, by Chemical Substitution, by Electro-thermal Coagulation and by Diathermy." Perdue has for some years been associated there with O. A. Johnson, who as a cancer cure quack, got into trouble with the federal authorities some years ago, at which time a quietus was put on his mail-order cancer cure. Perdue's name used to appear in the "catalog" of a low-grade medical school that ran for some years in Kansas City known as the Eclectic Medical University. It went out of existence in 1918. Practically every state in the Union refused to recognize the school or to admit its graduates to their examinations. On the "faculty list" Perdue's name appeared as a "Professor of Anatomy" and also as a "Professor of Chemistry and Physiology" to say nothing of "Professor of Pre-

ventive Medicine." Perdue's name has appeared on the program of the "American Association of Progressive Medicine" which was operated by such individuals as Simon Louis Katzoff, R. Swinburne Clymer, Orin W. Joslin, George Starr White and others of a similar stripe. Of course, Perdue is not a Member or a Fellow of the American Medical Association. Moreover Perdue is not even licensed to practice medicine in Missouri.

CHARLES ELTON BLANCHARD, M.D., Youngstown, Ohio.—Dr. Blanchard appears on the program as the one who is to give an "Ambulatory Proctology Clinic." Some months ago physicians were being circularized and urged to purchase "An Epitome of Ambulant Proctology" by Charles Elton Blanchard. The circular also notified the profession that a new society had been brought into being known as "The American Academy of Ambulant Proctology" of which C. E. Blanchard was secretary-treasurer and J. B. Albright, the advertising "rectal specialist" of Philadelphia, its president. C. Elton Blanchard also seems to be the corresponding secretary of the "American Association of Independent Physicians." This organization is, apparently, the creature of one Leonard L. Landis who runs a "medical institute" in New York City and puts out a book urging physicians to advertise. Dr. Blanchard is neither a Member nor a Fellow of the American Medical Association.

These are just some of the individuals whose names appear on the program of the American Association for Medico-Physical Research meeting in Chicago September 21-26, 1925. There are also on the program several others in the same class, but the limitations of space make it impossible at this time to take up these names for individual consideration. From what has been published, however, it should not be difficult to judge the probable scientific status of the American Association for Medico-Physical Research.

Correspondence

"GLYCEROL—A SUGAR FORMER"

To the Editor:—In the issue of September 12 appears a current comment on glycerol. The point is well taken, without doubt, especially since one Baltimore newspaper and a national press bureau widely heralded glycerin as a "cure" for diabetes about a year ago. Doubtless many patients took this newspaper authority as license to use glycerol ad libitum as an addition to the diet. Probably many physicians have likewise used glycerin without a full understanding of its relationship to carbohydrate metabolism.

Beginning in 1922, with Dr. R. R. Hannon, I experimented with glycerol as a substitute for carbohydrate. It was known that glycerol was a sugar former and that it was antiketogenic. It seemed possible that to a certain extent glycerol could be oxidized as such, that is, without conversion into glucose, and that it might exert its antiketogenic effect without being so converted. Cremer had found that glycerol given to phlorhizinized dogs was only partially converted into glucose and excreted as such. Lusk quoted Verzár, showing that in incomplete diabetes the power to oxidize three-carbon compounds is retained longer than the ability to utilize hexoses.

Encouraged by these considerations, we carried out experiments on patients, with most gratifying results in some cases. One instance was reported before the American Society for Clinical Investigation in 1923, a patient with severe diabetic acidosis and bronchopneumonia. The carbon dioxid combining power was 12 per cent. by volume. This was before the advent of insulin. On a diet consisting of cream and glycerin sufficient to furnish his basal requirement of calories and balanced as to ketogenic and antiketogenic materials, this patient recovered from the acidosis and ultimately from the pneumonia. In another paper (McCann, Hannon, Perlzweig and Tompkins: *Arch. Int. Med.* **32**:226-258 [Aug.] 1923), one or two other cases were referred to, but no comprehensive report was made, owing to the shift of interest to insulin.

The innocent cause of the newspaper splurge was a paper by Dr. H. M. Thomas, Jr., who reported some cases in which the substitution of glycerol for carbohydrate proved to be a useful maneuver (Thomas: *Bull. Johns Hopkins Hosp.* **35**:201 [July] 1924).

I am convinced that in many cases one may withdraw carbohydrate from the diet of patients with acidosis and replace it with glycerol to the extent of two to two and one-half times the weight of the carbohydrate withdrawn, with beneficial effects from the additional antiketogenic substance, without an increase in blood sugar or glycosuria.

Recent work from Lusk's laboratory (Chambers and Deuel: *J. Biol. Chem.* **65**:21 [Aug.] 1925) has shown that, in complete phlorhizin diabetes, glycerol is completely convertible into glucose in some, though not all, the experimental animals. The glycerol not converted was found not to be oxidized in phlorhizinized animals. It should be remembered that phlorhizin diabetes is not the same thing as pancreatic diabetes.

Our clinical observations may possibly be explained by Verzár's work. An analogous case is that of dihydroxyacetone. This substance is also a sugar former, but Rabinowitch (*J. Biol. Chem.* **65**:55 [Aug.] 1925) reports that it is better tolerated than glucose in severe diabetes and that it produces less effect on the blood sugar level than its equivalent of glucose.

WILLIAM S. MCCANN, M.D., Rochester, N. Y.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CLIMATOTHERAPY FOR ASTHMA

To the Editor:—I have a bad case of bronchial asthma in a patient, aged 40, whom I have given all possible treatment here without much result. I have advised him to go West to a warm, dry and equal climate. I suggested Arizona, Texas or southern California. I thought that Colorado, Montana or Wyoming, or that country might be objectionable because of risk to the heart from altitude. Please tell me your idea and give information concerning sanatoriums or locations. If you should print this in THE JOURNAL, please omit my name. M.D., Iowa.

ANSWER.—Climatotherapy in bronchial asthma is, at best, an experiment, and an expensive one at that. Exhaustive sensitization tests and immunization therapy are likely to prove a better investment in most cases.

Whether any one climate will cure the patient or not depends on whether it offers him freedom from the causative factor. Obviously, it is most especially the seasonal cases that are susceptible to benefit from change of climate. Thus, the patient with hay asthma will be free from suffering in any climate where the causative pollen does not exist. High altitudes and the ocean offer general freedom from pollens; but the patient hypersensitive to ragweed, for instance, will be comfortable anywhere else, provided there is no ragweed pollen. A person suffering from asthmatic bronchitis during inclement weather may be free from his affliction if he spends the seasons of such weather in the south.

The patient with nonseasonal asthma may also be benefited by change of climate, provided it frees the patient from his noxa. For example, a person susceptible to animal emanations will be cured by living wherever the particular animal to which he is susceptible does not exist. In nonseasonal asthmatic bronchitis, climatic improvement of the bronchitis and with it of the asthma may at times be secured by modification of expectoration. If the expectoration is scanty, the humid atmosphere of a warm seacoast is likely to agree best; while, for patients with profuse expectoration, dry climate is indicated, such as that of Arizona. Patients with emphysema do not tolerate high altitudes; but, unless

the emphysema and accompanying heart weakness are of a high degree, and if the patient does not have to exert himself a great deal, moderate elevation is not objectionable.

It will be plain from what has just been said that there is no one sanatorium or location likely to be suitable for more than a limited proportion of asthmatic patients.

IMMUNIZATION AGAINST SCARLET FEVER

To the Editor:—What is the general opinion regarding immunization against scarlet fever by three doses of streptotoxin? Last spring I tested about 125 children and gave them the positives, three doses of toxin obtained from the laboratory of the New York City board of health. I expect this fall to retest most of the group. There seems to be considerable difference of opinion on this subject, and I should appreciate learning what conclusions you have arrived at.

H. G. BULL, M.D., Ithaca, N. Y.

ANSWER.—Probably the best answer to this question at the present time is contained in the following quotation from an article by George F. Dick and Gladys Henry Dick on the results of the skin test for susceptibility to scarlet fever and the preventive immunization with scarlet fever streptococcus toxin (THE JOURNAL, May 16, 1925, p. 1477): "The New York City Health Department has employed scarlet fever toxin in preventive immunization on a large scale but has given it in doses too small completely to immunize the majority of susceptible persons. Zingher (The Dick Test in Normal Persons and in Acute and Convalescent Scarlet Fever Cases, THE JOURNAL, Aug. 9, 1924, p. 432) reported the use of 100, 250 and 500 skin test doses, a total of 850 skin test doses. Toxin put up in this inadequate dosage has been widely distributed by commercial firms." In Table 2 of their article the Dicks show that the percentage of complete immunization as determined by a negative skin test steadily increases with the amount of toxin injected as expressed in skin test doses. When from 1,000 to 2,000 skin test doses were injected, only 14.3 per cent. were completely immunized; when from 5,000 to 6,000 skin test doses were injected, 66 per cent. were completely immunized; and when from 10,000 to 12,500 skin test doses were injected, 91.8 per cent. were completely immunized. Obviously, the thing to do is to inject enough toxin properly spaced to induce a degree of immunity that will give a negative skin test. For this purpose five doses undoubtedly are better than three. To quote again from the Dicks: "The size of the first immunizing dose is important. It should be small enough to avoid severe reactions, yet sufficiently large to stimulate the production of antitoxin so that a larger amount of toxin may be given for the second dose. No dose should be out of proportion to the one that preceded it. A first dose of 500 skin test doses and a second of 1,500 skin test doses, and considerably larger third doses have been employed . . . without any undesirable reactions." At present the best experience appears to indicate the following skin test doses at intervals of from five to seven days: 500, 1,500, 5,000, 15,000, 20,000. About two weeks after the last injection, a skin test should be made to determine whether immunization is complete.

THE U. S. PHARMACOPEIA

To the Editor:—In the discussion of the forthcoming Pharmacopeia which appeared recently in the columns of THE JOURNAL, I find no mention made where it is published and at what price. This information would be appreciated.

N. T. N. H., M.D., Michigan.

ANSWER.—The Board of Trustees of the U. S. Pharmacopeial Convention awarded the contract for publishing the United States Pharmacopeia X to the J. B. Lippincott Company, Washington Square Press, Philadelphia. The price of the United States Pharmacopeia X, buckram bound, is $4.

TETANUS ANTITOXIN

To the Editor:—For what length of time does a prophylactic dose (1,500 units) of tetanus antitoxin protect a person? I have treated a number of puncture wounds and have given the patients a dose of tetanus antitoxin. In two or three weeks many of the patients would have another similar wound. In no case did I repeat the antitoxin, but I am wondering what the time limit on the protection from the antitoxin is in such cases.

T. K. H., Indiana.

ANSWER.—To insure protection in cases of severe injury, it is usually advised to give a second injection of antitoxin ten days after the primary one, since the antitoxin is gradually eliminated and little of it remains after ten days.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 19. Sec., Dr. H. W. Loeb, 1402 South Grand Blvd., St. Louis, Mo.

ARIZONA: Phoenix, Oct. 6-7. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

CALIFORNIA: Sacramento, Oct. 19-22. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, Oct. 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 13. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.

FLORIDA: Tallahassee, Oct. 13-14. Sec., Dr. W. M. Rowlett, Citizens Bank Building, Tampa.

GEORGIA: Atlanta, Oct. 13-15. Sec., Dr. C. T. Nolan, Marietta.

HAWAII: Honolulu, Oct. 12-15. Sec., Dr. Guy C. Milnor, 401 Beretania St., Honolulu.

IDAHO: Boise, Oct. 6. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

ILLINOIS: Chicago, Oct. 6-8. Director, Mr. A. M. Shelton, Capitol Bldg., Springfield.

IOWA: Des Moines, Oct. 14-16. Dir. of Examinations and Licenses, Mr. H. W. Grefe, Des Moines.

KANSAS: Topeka, Oct. 13. Sec., Dr. Albert S. Ross, Sabetha.

MICHIGAN: Lansing, Oct. 13-15. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, Oct. 6-8. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.

MISSOURI: Kansas City, Oct. 27-30. Sec., Dr. James Stewart, Jefferson City.

MONTANA: Helena, Oct. 6. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III, Baltimore, Oct. 15. All applications for this examination must be made on or before Oct. 1. Sec., Dr. J. S. Rodman, 1600 Walnut St., Philadelphia.

NEVADA: Carson City, Nov. 2. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 20-21. Sec., Dr. Alex. Macalister, Trenton Trust Bldg., Trenton.

NEW MEXICO: Santa Fe, Oct. 12-13. Sec., Dr. W. T. Joyner, Roswell.

NEW YORK: Albany, Buffalo, New York City and Syracuse, Sept. 21-24. Chief, Education Dept., Mr. Herbert J. Hamilton, Albany.

RHODE ISLAND: Providence, Oct. 1. Sec., Dr. Byron U. Richards, State House, Providence.

UTAH: Salt Lake City, Oct. 6. Director of Regis., Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WEST VIRGINIA: Charleston, Oct. 13. Sec., Dr. W. T. Henshaw, Charleston.

WYOMING: Cheyenne, Oct. 5-7. Sec., Dr. G. M. Anderson, State Capitol, Cheyenne.

Arkansas May Examination

Dr. J. W. Walker, secretary of the Arkansas Board of Medical Examiners, reports the written examination held at Little Rock, May 12-13, 1925. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Twenty-three candidates were examined, all of whom passed. Twelve candidates were licensed by reciprocity. The following colleges were represented:

PASSED		Year Grad.	Per Cent.
College			
University of Arkansas School of Medicine	(1925)		76.3, 76.4, 79.8, 80.1, 80.5, 81.5, 81.5, 82.5, 82.7, 82.9, 83.2, 84, 84.3, 86.1, 86.4, 87.4
Tulane University	(1909)		82
Memphis Hosp. Med. Coll.	(1896)	78.3, (1903)	77.7, (1900) 78
University of Tennessee Coll. of Med.	(1924)	78.3, (1925)	75.7
Vanderbilt University School of Medicine	(1901)		79.4

LICENSED BY RECIPROCITY		Year Grad.	Reciprocity with
College			
University of Arkansas School of Medicine	(1911)		Oklahoma
American Medical Missionary College	(1904)		Ohio
Chicago College of Medicine and Surgery	(1909)		Mississippi
University of Louisville	(1910)		Kentucky
Tulane University	(1922)		Louisiana
Johns Hopkins University	(1921)		Maryland
University and Bellevue Hospital Medical College	(1922)		Mississippi
University of Oklahoma	(1923)		Oklahoma
University of Pennsylvania	(1922)		Mississippi
Meharry Medical College	(1921)		Tennessee
University of the South Medical Department	(1899)		Alabama
Vanderbilt University	(1912)		Tennessee

Kansas June Examination

Dr. A. S. Ross, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Kansas City, June 16-17, 1925. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Forty-nine candidates

were examined, all of whom passed. Ten candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University Medical School		(1925)	92.6
University of Kansas School of Medicine		(1925)	88, 88.3, 88.4, 88.6, 88.6, 88.9, 89.2, 89.6, 89.7, 89.9, 90.1, 90.1, 90.1, 90.4, 90.4, 90.6, 90.6, 91, 91.2, 91.3, 91.6, 91.7, 91.8, 92, 92.1, 92.5, 92.6, 92.6, 92.7, 94.3, 96
St. Louis University School of Medicine		(1924)	87.8, 89.5
University Medical College of Kansas City		(1910)	88.7
Washington University School of Medicine		(1924)	87, (1925) 87.8, 88, 89.7, 91.7
Creighton Medical College		(1924)	89, 91.4
University of Nebraska College of Medicine		(1925)	93, 93.8
Cornell University School of Medicine		(1924)	94.8
Western Reserve University School of Medicine		(1925)	93
University of Oklahoma School of Medicine		(1924)	86.6
Jefferson Medical College		(1919)	86.5, (1920) 90.2

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1911)	Arkansas
Bennett Medical College		(1913)	Illinois
Rush Medical College		(1921)	S. Dakota
University of Illinois College of Medicine		(1902)	Iowa
Kansas City Medical College		(1904)	Oklahoma
Northwestern Medical College, St. Joseph		(1888)	Nebraska
Creighton Medical College		(1918)	Nebraska
University of Nebraska College of Medicine		(1920), (1924)	Nebraska
Chattanooga Medical College		(1904)	Oklahoma

Book Notices

THE FAITH, THE FALSITY AND THE FAILURE OF CHRISTIAN SCIENCE. By Woodbridge Riley, Ph.D., Frederick W. Peabody, LL.B., and Charles E. Humiston, M.D., Sc.D. Cloth. Price, $3.50. Pp. 408. New York: Fleming H. Revell Company, 1925.

In this book, three investigators present accurate knowledge and clear exposition of the history and methods of Christian science.

Dr. Riley, psychologist and specialist in American philosophy, deals with the sources of Christian science, demonstrating plagiarism from Shakerism, Mesmerism and Quimbyism, together with inheritances from "Mother" Ann Lee and distortions of the Neo-Platonism of Bronson Alcott. Written correspondence, parallel passages, chronology and minute facts of Mrs. Eddy's life are employed as proof. Whatever of Christian science was original with its founder, Dr. Riley considers to have been the product of her abnormal psychologic processes. Given the facts in the life of any demagogue and a knowledge of mental mechanisms, it is not hard to put in doubt his mental soundness. Dr. Riley finds in Mrs. Eddy such symptoms as amnesia, automatic writing, delusions, hallucinations and obsessions.

Mr. Peabody, who as writer, lecturer and lawyer has come to grips with Christian science in the past, now attacks its "falsity." His 130 pages occupy the middle of the book. His zeal is equal to that of Dr. Riley, his satire as keen and his argument equally supported. "Two things," he says, "Mrs. Eddy dearly and desperately loved—money and power," and he sets forth clearly the means by which he believes she attained these things. First, he takes up her establishment of a church government so autocratic that, "completely dominant in her life, in her death she is dominant through her unchangeable laws." With such an irresponsible system established, irregularities certainly would be possible. Mr. Peabody undertakes to show how many irregularities were prosecuted. For instance he offers evidence of threatened boycotts against booksellers and publishers, whereby truths unfavorable to Christian science were suppressed. In his final chapter, "Cash," he tells some of the means by which Mrs. Eddy "harvested three million dollars from the gullibility of her followers."

The third, and final section of the book, entitled, "The Failure of Christian Science," is written by a physician. Dr. Humiston's section displays all the excellences of the other two parts, and to a physician is even more interesting. It is confined to the therapeutic side of the subject. The author draws parallels between characteristics of Christian science and those of medical quackeries. He displays the ignorance concerning medicine and what he deems trickery among Christian science practitioners. Then he analyses eighty-four testimonials of their "cures." The sixty-four pages of case reports which follow are the real meat of the section—"Failures of Christian Science." Instances of quarantine resisted, of last minute appeals to regular physicians, of needless deaths, fill the chapter. After these case reports comes Dr. Humiston's conclusion: "From the medical standpoint, Christian Science, as a system of treating human ailments, is thus seen to be cruel Failure."

The book is worth the time of both physician and layman. The careful research, cogent argument and incisive style of all three sections render it both profitable and absorbing.

AN INTRODUCTION TO DERMATOLOGY. By Sir Norman Walker. Eighth edition. Cloth. Price, $7. Pp. 373, with 172 illustrations. New York: William Wood & Company, 1925.

This edition has been largely rewritten, but by deleting references to rare conditions the author has avoided adding more than a few pages. As the title indicates, it is an introduction to dermatology rather than a reference work. There are a few references to the literature in the body of the text but otherwise no bibliography. The descriptions of the various disorders are very short and not always adequate. For example, under the title of pityriasis rubra, a short description is given of the Wilson-Brocq type of secondary dermatitis exfoliativa, with no mention of the Hebra-Jadassohn idiopathic type, which differs in many essentials from the secondary type, and which is generally known as pityriasis rubra. Moreover, the illustration accompanying the description is obviously that of the secondary type. As the work represents a collection of lectures delivered at the University of Edinburgh, it is highly personal and subjective, which is much to be desired in a work of this kind, but which at the same time leads to much disagreement in opinion on the part of the critical reader. There are numerous colored plates prepared from moulages, which we would much prefer to see replaced in the next edition by good monochromatic photographs of the actual skin lesions.

TILL KÄNNEDOMEN OM SÅ KALLAD SPONTAN SUBARACHNOIDALBLÖDNING. En klinisk studie. Akademisk avhandling. Av Lennart Ehrenberg. Paper. Pp. 195. Uppsala: Almqvist & Wiksells, 1924.

This is an exhaustive monograph on spontaneous subarachnoid hemorrhage by an investigator whose first paper on the subject appeared in 1912, and who has been able to add ten cases of his own to sixty-two compiled from the literature and carefully abstracted. Ehrenberg claims a certain clinical independence for nontraumatic subarachnoid and pial hemorrhage occurring by itself apart from cerebral hemorrhage and meningitis. In a fairly large number of cases —thirteen of twenty-three examined postmortem—some form of arterial disease was present. In the others, many in young persons, some weakness or peculiarity of the cerebral vessels is supposed to exist, somewhat analogous to the poorly understood conditions underlying the tendency to nosebleed and subconjunctival hemorrhage in young persons.

A HISTORY OF THE LYCOMING COUNTY MEDICAL SOCIETY. Cloth. Price, $8. Pp. 418, with illustrations. Williamsport, Pa.: Lycoming County Medical Society, 1925.

A commendable effort is the publication of this, the first volume in the history of the Lycoming County Medical Society. Subsequent volumes are to include the transactions of the organization published at five year intervals with material taken from the society's bulletins. The present book gives a picture of the practice of medicine in Pennsylvania from the earliest times and then carries on the records of the society from year to year, beginning with 1864. The second portion of the volume presents the biographies of deceased members of the society; and the third portion, the biographies of those now practicing medicine in that community. The work concludes with special articles on various phases of medical practice, statements descriptive of the hospitals in the county, and a general statement on medical organization work in Pennsylvania. The book represents much editorial and research service, and is in every way a commendable production, particularly for a unit of the scope of the county society.

Medicolegal

Negligence of One Assuming Care of Injured Person

(Hoyt v. Tilton (N. H.), 128 Atl. R. 688)

The Supreme Court of New Hampshire says that one of the grounds on which the plaintiff sought as administrator to recover damages was for the alleged negligent performance by the defendant of an assumed duty to care for the plaintiff's intestate after his injury. Liability for such a wrong is clearly established in New Hampshire. The rule of law applicable is that the defendant is responsible for negligent acts while in the performance of the assumed duty, and that he cannot carelessly abandon a duty that has been assumed. The evidence in this case was not reported, but what the defendant did or did not assume to do was a question of fact, and the plaintiff was entitled to have submitted to the jury the issue presented by the charge of failure on the part of the defendant to perform an assumed duty to care for the injured man.

Father Not Liable for Services for Adult Daughter

(Breuer v. Dowden (Ky.), 268 S. W. R. 541)

The Court of Appeals of Kentucky, in reversing a judgment that was rendered in favor of plaintiff Dowden from which defendant Breuer appealed, does so with directions to dismiss the plaintiff's petition. The court says that for about eight months a daughter of the defendant was under the care of the plaintiff. Of this time she spent six weeks in a hospital away from her father's home. She testified that she was suffering from some nervous trouble, but was not confined to her bed or room, except while at the hospital, and then for the purpose of treatment. She was about 23 or 24 years of age, but had never had employment or earned her living. The evidence showed that she and her father were not on friendly terms, and that her mother was also estranged from him, although they lived in the same house. The daughter and her mother went to the plaintiff's office at the time his services were engaged. They gave a history of the daughter's case, but nothing was said about who would pay the bill or the amount to be charged. The plaintiff never called on the daughter at the parental residence, and the father never knew of the employment of the plaintiff until long after most of the services had been rendered.

From the texts and cases cited by the parties, the court deduces the rule to be that a parent is not liable for the debts of his adult child in the absence of a statute to the contrary, unless the child is in such a feeble and dependent condition physically or mentally as to be incapable of supporting himself; that if at the time the child becomes of age he is physically and mentally sound and able, if willing, to make and earn his own support, the parent is not liable for his debts or obligations thereafter contracted, even though he should later become sick or mentally unbalanced and therefore incapacitated to earn a livelihood. If, however, the child at the time of his arrival at the age of 21 is sick or otherwise incapacitated to earn a living for himself, and is, at the time, living in the home of the parent as a member of the household, the parent is liable for necessaries furnished him.

If it appeared from the evidence in this case that the adult daughter of the defendant who lived in the home as a member of the family was physically or mentally incapacitated to earn her own livelihood at the time she arrived at her majority, and that this disability continued until the employment of the plaintiff physician, the court thinks his cause would be sustainable. But in the absence of such a showing the court must hold that the father's liability for the debts of his adult daughter, even for necessities, terminated on her arrival at the age of 21 years, and having once terminated could not be revived even though she became sick and incapacitated while continuing as a member of his household.

It must not be overlooked that the physician was engaged by the daughter without the knowledge or consent of the father, and that the first bill rendered for services was made out and forwarded to her. When received by the daughter she immediately, without consulting the father, called at the physician's office and told him that she had nothing with which to pay him, and that she expected her father to pay the bill for her. Thereupon the physician mailed the bill to the father and requested payment. These facts made it certain that the services were rendered to the daughter on her credit, and that credit was not extended to the father. The court is also of the opinion that the mother had no authority as agent of the father, under the facts of this case, to engage the physician to perform services for her adult daughter, if indeed she did attempt to make such engagement.

Refusal to Call Physician for Child with Tetanus

(Beck v. State (Okla.), 233 Pac. R. 495)

The Criminal Court of Appeals of Oklahoma says that it appeared that an 11 year old son of defendant Beck had for some hours been ill from tetanus, from which he was suffering intense pain and rigidity of the muscles which caused his head and other portions of his body to be drawn into unnatural positions. Some neighbors, together with members of the defendant's family at his home where the boy lay ill, sought to relieve the child's suffering by prayer and appeals for divine aid; other neighbors intervened and advised the calling of a physician, which was at first refused and the suggestion repulsed. Finally, under pressure, consent was given by the defendant to the administering of medical treatment. Accordingly, a serum treatment was administered by two physicians, but the boy expired six or eight hours later. In the opinion of these physicians, the treatment was administered too late. From their testimony the inference might be drawn that, if the treatment had been administered earlier, the boy's life might have been saved.

This prosecution was based on Section 1855 of the Compiled Statutes of 1921 of Oklahoma, which provides that "any parent of any child who wilfully omits, without lawful excuse, to perform any duty imposed on him by law to furnish necessary food, clothing, shelter, or medical attendance for such child is guilty of a misdemeanor." The provisions of this section should be reasonably construed. A fair amount of discretion is vested in parents charged with the duty of maintaining and bringing up infant children, and this statute will not be construed to mean that a physician must be called for every trifling complaint with which a child might be afflicted, such as may be overcome by ordinary household nursing by members of the family. But where, as in this case, a child suffers intense pain, and where the muscles of the body have become drawn and rigid, it would seem that an ordinarily kind or prudent parent, solicitous for the welfare of his child and anxious to promote its recovery, would call in medical aid. A humane desire to give at least temporary relief from suffering should alone be sufficient to impel a parent to call a physician when his child is in intense pain during a prolonged convulsion. Under such circumstances it would seem that a parent is guilty of a violation of the provisions of this statute when he fails to furnish medical attendance.

To sustain a conviction in a case of this character, the evidence should show a wilful neglect of duty under all the circumstances. The defendant contended, on appeal, that the evidence did not show that he was neglecting a plain duty imposed by law; that the evidence did not show that he knew the gravity of the malady, but did show that, as soon as he was apprised of its gravity and probable fatal results, he consented to the administering of the serum; and that, if he made a mistake in deferring action until it was too late, it was an honest mistake, for which he should not be held criminally liable. These were questions primarily for the jury. While the testimony as to the length of time that the boy had suffered before the serum was administered and the attitude of the defendant in neglecting and refusing to call a physician or in discouraging medical treatment was not as definite as it might have been, the weight of the testimony was for the jury. From the testimony it evidently appeared to the jury, and it appears to this court, that the defendant was grossly remiss in his duty toward his child in not calling a physician earlier, and that the evidence as a whole was sufficient to support the verdict of guilty of omitting to furnish medical aid to his child, without lawful excuse.

The defendant's punishment was assessed at confinement in the county jail for six months and the payment of a fine of $50 and costs. But considering the fact that he appeared to have been a member of a religious sect which believes in faith and divine healing, and that he may have been influenced by other members of the sect there assembled, the court believes that the punishment was excessive, and should be modified by expunging the jail sentence.

Exact Cause of Infection Need Not Be Demonstrated

(Royal Indemnity Co. v. Industrial Accident Commission et al. (Calif.), 233 Pac. R. 381)

The District Court of Appeal of California, First District, Division 2, says that it was contended that the evidence before the industrial accident commission in this proceeding under the workmen's compensation act did not warrant a finding that the employee who instituted the proceeding and was awarded compensation sustained an injury by bumping his knee against a gate on the ranch on which he was working, which injury caused a slight wound, followed by a severe infection. The court does not deem it necessary to state what the evidence was; but says it was true that the nature of the injury, the facts and circumstances surrounding it, and the symptoms that followed made it impossible to demonstrate, beyond the possibility of a doubt, the exact cause of the infection which resulted in most severe and lengthy illness for the employee. But such demonstration was not required. There was medical testimony in the record sufficient to sustain the award, and, that being so, this court was not concerned with the conflicting testimony introduced before the commission.

Employers Need Not Make Rules for Ambulance Drivers

(Reed v. Ridout's Ambulance, Inc. (Ala.), 102 So. R. 906)

The Supreme Court of Alabama, in affirming a judgment for the defendant in this action for damages for injuries sustained by one of its employees while riding in its ambulance, which was driven into a post or other obstruction, says that the case was preeminently of the character of one of those in which it has been held, as a matter of law, that where the work is simple in character there is no duty on the part of the master to promulgate rules for his servants. Driving a motorcar, even a heavy truck or ambulance, is a simple, ordinary and individual act of common and daily occurrence. It is not collaborative, and in the defendant's business it had no relation to the duties or the safety of other employees—except, perhaps, as in this case, of a single assistant, who knew of the danger, if any, and who was a participant in the act. As to the impracticability of a rule limiting the speed of an ambulance used in emergency cases such as this, where it was stated that the ambulance was going to answer an emergency call to take a dangerously wounded person to a hospital, the court thinks there can scarcely be two opinions. Speed is of the very essence of an effective service. Dependent on traffic conditions at different times and places, a high rate of speed might be entirely safe on some occasions, and human life might depend on it—as it often does depend on the promptest medical or surgical relief. In the very nature of the case, the act was one involving discretion on the part of the driver, and not susceptible of control by preregulation. The conclusion cannot be avoided that there was a failure to show a condition that imposed on the defendant the duty of regulation by the promulgation of a rule or of rules.

Evidence and Instructions When Insanity Is a Defense

(People v. Krauser (Ill.), 146 N. E. R. 593)

The Supreme Court of Illinois holds, in this murder case, in which there was a defense of either feeblemindedness or insanity, that there was no error in the admission in evidence over objection of the testimony of two physicians, which they gave of physical and mental examinations that they had made of the defendant, which testimony was objected to as compelling the defendant to give evidence against himself. The court says that the rule is stated as follows:

Where the defense interposed is insanity, evidence of the facts disclosed at a physical and mental examination of accused by physicians, either prior to the trial or during an adjournment of the court while the trial is in progress, does not vitiate the constitutional privilege of accused not to be a witness against himself.

Nor does the court consider that there was error in permitting the physicians to testify concerning the statements and conduct of the defendant in the circuit court on the hearing, before his plea of guilty had been withdrawn, they having been present, and being permitted to state what then occurred, as a part of the basis on which their opinions were formed. The evidence was proper to be presented to the jury as showing a part of the facts on which the physicians based their opinions as to the mental condition of the defendant. Nor was it error to permit the physicians to testify that the defendant was falsifying and feigning insanity. This followed necessarily from their opinion that he was neither insane nor feebleminded, which they presented to the jury.

But there was error in an instruction which, to justify an acquittal, required of the defendant not only ability to distinguish between right and wrong, but the power to choose between them and act according to his choice; he must not only understand the character of his act, but have the power to choose and to act accordingly. In *People* v. *Lowhone*, 292 Ill. 32, 126 N. E. 620, the ability to judge and the power to choose are held equally necessary to criminal responsibility, and therefore the lack of either will justify a verdict of not guilty. The instruction in question stated that both the knowledge of right and wrong are necessary to such a verdict, and it was therefore erroneous to give it.

Another instruction to the jury was that in order to find the defendant not guilty on the ground of insanity, such insanity must be so clearly proven as to raise a reasonable and well founded doubt of the defendant's guilt when the whole evidence was taken together, and not a mere shadow or possibility of a doubt. This imposed the burden of proving insanity on the defendant, and was erroneous for that reason. The burden of proving the sanity of the accused in a criminal case in which his sanity is in issue is always on the prosecution, and it is not necessary, before the jury can find the defendant not guilty, that insanity should be proved clearly or even by a preponderance of the evidence. It is only necessary that there should be evidence tending to prove insanity sufficient, in connection with all the evidence, to raise a reasonable doubt of the defendant's guilt. The use of the words "clearly proven," in the instruction, was erroneous. So was the use of the words "well founded" in connection with reasonable doubt. If a reasonable doubt actually exists, it is sufficient whether well or ill founded.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 20-24. Dr. Luther C. Peter, Chestnut and 20th Streets, Philadelphia, Secretary.
American Association of Railway Surgeons, Chicago, Oct. 21-23. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.
American College of Radiology and Physiotherapy, Chicago, Oct. 19-22. Dr. Roy W. Fouts, 121 South 33d Street, Omaha, Neb., Secretary.
American College of Surgeons, Philadelphia, Oct. 26-30. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
American Public Health Association, St. Louis, Oct. 19-22. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.
American Roentgen Ray Society, Washington, D. C., Sept. 22-25. Dr. Charles L. Martin, Baylor Hospital, Dallas, Texas, Secretary.
Association of Military Surgeons of the United States, New York, Oct. 8-10. Col. J. R. Kean, U. S. A. Ret., Army Medical Museum, Washington, D. C., Secretary.
Central States Pediatric Society, Chicago, November 6-7. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.
Colorado State Medical Society, Colorado Springs, Sept. 29-Oct. 1. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.
Delaware State Medical Society, Wilmington, Oct. 13-14. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.
Indiana State Medical Association, Marion, Sept. 23-25. Mr. T. A. Hendricks, Hume Mansur Building, Indianapolis, Executive Secretary.
Interstate Postgraduate Assembly of America, St. Paul, Minn., Oct. 12-16. Dr. W. B. Peck, 82 Stephenson St., Freeport, Ill., Managing Director.
Kansas City Clinical Society, Kansas City, Mo., Oct. 5-9. Dr. James R. McVay, Rialto Building, Kansas City, Mo., Secretary.
Kentucky State Medical Association, Owensboro, Oct. 5-9. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
Missouri Valley, Medical Society of the, St. Joseph, Sept. 30-Oct. 2. Dr. Charles Wood Fassett, 115 East 31st Street, Kansas City, Mo., Secretary.
Pennsylvania, Medical Society of the State of, Harrisburg, Oct. 5-8. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.
Southern Medical Association, Dallas, Texas, November 9-12. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.
Vermont State Medical Society, St. Johnsbury, Oct. 15-16. Dr. William G. Ricker, 29 Main Street, St. Johnsbury, Secretary.
Virginia, Medical Society of, Richmond, Oct. 13-16. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

30: 147-290 (Aug.) 1925

Growth of Crypts and Glands of Human Stomach. G. H. Scott, Minneapolis.—p. 147.
*Roentgenogram in Early Scurvy. K. F. Pelkan, Boston.—p. 174.
Amount of Cerebrospinal Fluid in Hydrocephalus. A. G. Mitchell and M. Zeligs, Cincinnati.—p. 189.
*Rickets in Infants. Treatment with Irradiated Milk. B. Kramer, Baltimore.—p. 195.
*Spectroscopic Observations on Cod Liver Oil. F. W. Schultz and M. Morse, Minneapolis.—p. 199.
*Spasmophilia; Inorganic Constituents of Blood and Cerebrospinal Fluid. J. D. Nourse, D. N. Smith and J. I. Harman, Cleveland.—p. 210.
*Van den Bergh Test for Icterus in Infants. C. G. Grulee and A. Mebane, Chicago.—p. 219.
*Acrodynia. F. C. Rodda, Minneapolis.—p. 224.
*Blanching Test in Scarlet Fever. Use of Specific Streptococcus Antiserum. S. J. Levin and J. P. Parsons, Ann Arbor.—p. 232.
Apparatus for Rapid Preparation of Protein Milk. W. C. Davison, Baltimore.—p. 238.
Icterus Neonatorum. S. Van Creveld, Amsterdam, Holland.—p. 240.

Roentgen-Ray Diagnosis of Scurvy.—Animal experiments and observations of clinical cases lead Pelkan to summarize his paper as follows: The ground-glass appearance of the shaft of the bone, which is due to the disappearance of trabeculae, is an important and hitherto underestimated roentgenographic sign of scurvy. Pelkan supports Wimberger's claim that the edging of the epiphyseal centers is a constant and reliable sign of scurvy. The combination of broadened epiphyseal line, edging of the epiphyseal center and disappearance of trabeculations in the shaft is pathognomonic of this disease. It is proposed by Pelkan to substitute for the term "Trümmerfeldzone" the term "scurvy line." He asserts that scurvy can be diagnosed by the roentgenogram before any of the accepted clinical symptoms (pain, hemorrhagic manifestations) have appeared.

Irradiated Milk for Rachitic Children.—In a series of eight cases of active rickets seen by Kramer, the administration of irradiated milk produced healing in every case. This was demonstrable at the end of the third week and was marked at the end of the fourth week. The chemical changes in the blood following this treatment were identical with those previously reported, which followed the administration of cod liver oil to rachitic children, or the exposure of such children to ultraviolet rays or to sunlight. Irradiated milk feeding induces a marked retention of both calcium and phosphorus.

Spectroscopy of Cod Liver Oil.—A suggestion which is offered by Schultz and Morse as a result of their investigation is that in a further study of the activation of cholesterol, the disappearance of the bands in its absorption spectrum may be used as an index of its antirachitic activity, perhaps eliminating to some degree the necessity for rat experiments.

Blood and Cerebrospinal Fluid in Spasmophilia.—The inorganic constituents of the blood and cerebrospinal fluid were investigated by Nourse et al. in seventeen cases of spasmophilia. No significant changes from normal were found, except the usual decrease in the calcium content of the blood during the active phase. In the cases of spasmophilia with convulsions, on the day of the first examination the calcium content of the blood serum and spinal fluid was found somewhat lower than the average for the entire series. Similar determinations were made in twelve cases of various diseases. No significant changes from normal were found in this group.

Van den Bergh Test in Icterus Neonatorum.—The results obtained by Grulee and Mebane agree quite well with those of other investigators who have studied the van den Bergh reaction in simple icterus neonatorum. Both from the umbilical blood and from the blood serum of the infant after the jaundice had developed only the indirect reaction was obtained. In three cases of jaundice occurring in the course of acute respiratory infections, and in one case following administration of neo-arsphenamin, the reactions were all indirect, which findings agree with the contention of van den Bergh. In two cases of catarrhal jaundice only indirect reactions were seen; in one case of obstructive jaundice the results were so irregular as to be of questionable value. The evidence here presented is such as to raise a doubt as to the value of the van den Bergh reaction as a method of differentiating between obstructive and nonobstructive types of jaundice in infants and in young children.

Acrodynia.—In Rodda's series of seventeen cases early recognition of the disorder and prompt removal of tonsils and adenoids have been followed by speedy recovery in all patients.

Blanching Test in Scarlet Fever.—In fifteen cases in which it was tried by Levin and Parsons, an antiserum prepared by injecting horses with the culture and filtrate of hemolytic streptococci obtained from cases of scarlet fever was effective in producing the Schultz-Charlton blanching phenomenon. The antiserum was not effective in blanching the eruption of two cases of erysipelas and of two cases presenting a scarlatiniform eruption on an anaphylactic basis. In three cases the authors were unable to blanch the rash of scarlet fever by using diphtheria antitoxin.

American Journal of Electrotherapeutics and Radiology, New York

43: 251-300 (July) 1925

Radiometric Investigation of Germicidal Action of Ultraviolet Radiation. W. W. Coblents, Washington, D. C.—p. 251.
Light in Prevention of Rickets. F. H. Humphris, London, England.—p. 263.
Cases of Sacro-Iliac Displacements. W. B. Show, New York.—p. 266.
Surgical Tuberculosis Treated with Carbon Arc Lamp. P. K. Sauer, New York.—p. 270.

American Journal of Roentgenology and Radium Therapy, New York

14: 1-104 (July) 1925

*Surgical Relief of Pain in Deep Carcinoma of Face and Neck. T. Fay, Philadelphia.—p. 1.
*Teratoid Tumor of Testicle with Late Metastases in Mediastinum. E. A. Pohle, Ann Arbor, Mich.—p. 5.
Treatment of Lung and Mediastinal Neoplasms by High Voltage Roentgen-Ray Therapy. S. Stern, New York.—p. 8.
Roentgentherapy and Diathermy in Blastomycosis. A. U. Desjardins, Rochester, Minn.—p. 14.
Lesions of Diaphragm. E. L. Jenkinson, Chicago.—p. 16.
*Simple Penetrating Ulcer of Greater Curvature of Stomach. E. S Blaine, Chicago.—p. 20.
Roentgen Rays in Negative Diagnois of Cancer of Stomach. J. W. Hunter, Norfolk, Va.—p. 24.
Fractures of Os Calcis. A. C. Hall, Detroit.—p. 27.
Central Chondroma of Middle Third of Shaft of Humerus; Case Report. C. M. Richards, J. B. Bullitt and D. R. Wilson, San Jose, Calif.—p. 29.
*Case of Extensive Generalized Skeletal Metastases Following Primary Carcinoma of Breast. A. J. Bendick and A. W. Jacobs, New York. —p. 35.
*Obstetric Roentgenology; Anencephaly. H. P. Doub, Detroit.—p. 39.
Modified Granger Method of Roentgenographing Sphenoids. L. Bryan, San Francisco.—p. 57.

Surgical Relief of Pain in Cancer of Face.—Avulsion of the posterior root of the fifth nerve has proved of value in Fay's experience in relief of pain from deep carcinoma of the face involving the branches of this nerve, as well as rendering anesthetic the involved area, permitting extensive treatment of the growth without discomfort. Ligation of the posterior roots of the cervical nerves has been successfully performed for involvement of the cervical plexus and cervical roots. Section of the petrous ganglion of the ninth nerve is possible when the invading tumor enters the distribution of this nerve, causing pain, though as yet this procedure has not been undertaken for carcinoma.

Teratoid Tumor of Testicle.—A case is reported by Pohle of a teratoid tumor (embryonal carcinoma) of the testicle treated by surgery and roentgen-ray irradiation, with a local

recurrence in one month, and metastases to the mediastinum after two years. The secondary growth responded well to deep roentgen-ray therapy and the patient is still well ten months after treatment.

Penetrating Ulcer of Greater Curvature of Stomach.—Penetrating ulcer of the upper part of the greater curvature of the stomach is a comparatively rare lesion. Blaine reports one case and describes the findings.

Extensive Skeletal Carcinoma Metastases.—Bendick and Jacobs relate a case of carcinoma of the breast of four and one-half years' duration in which the breast was removed two years ago. Metastases developed in all the cranial bones, both jaws, all divisions of the vertebrae, the ribs, both humeri, both shoulder girdles, the bony thorax, right radius and ulna, left radius, the phalanges and carpal bones of the right hand, and phalanges and metacarpal bones of the left hand.

Anencephalus.—Seven cases of anencephaly are reported by Doub. Four of these were diagnosed roentgenologically before delivery. Spina bifida was also diagnosed in one of these four cases. Two cases of intra-uterine fetal death with the characteristic roentgen-ray findings, a case of hydrocephalus, and a number of other abnormalities of pregnancy, as seen by roentgenologic examination, are also reported.

Boston Medical and Surgical Journal

193: 283-330 (Aug. 13) 1925

*Use of Drugs in Heart Disease. P. D. White, Boston.—p. 283.
New England Heart Association. H. Jackson, Boston.—p. 292.
Nursing Problems. A. Worcester, Waltham, Mass.—p. 293.
*Clinical Spirography. I. Pulmonary Response to Work in Normal, Obese, Cardiac and Anemic Persons. S. G. Mudd and J. H. Means, Boston.—p. 297.

Drugs in Heart Disease.—White says that helpful drugs in the treatment of heart disease are the sedatives, particularly bromids and morphin, when indicated, and occasionally purgatives, especially the salines, but there is nothing particularly new in their use or application.

Effect of Exercise on Respiration.—Spirographic studies have been made by Mudd and Means on a variety of problems. This paper deals with the effect of muscular work, both in normal and in pathologic subjects. The obese group showed the most marked increase in total ventilation following the standardized exercise. Dyspnea prevailed in three of the four patients studied. The pulse showed a slight acceleration following the exercise. The marked increase in total ventilation of the obese group was not dependent alone on the increased weight of the individuals, but may be due to diminished cardiac reserve. The group of patients with compensated cardiac disease showed an increase in total ventilation following the standardized exercise, which was approximately two thirds as marked as in the obese group. Dyspnea prevailed in eight of the ten individuals studied. The pulse showed a slight increase following the exercise. The normal subjects observed, showed an increase in total ventilation following the standardized exercise, which was approximately one-third as marked as in the obese group, and nearly one half as pronounced as in the cardiac group. None of the eight persons studied were dyspneic. The pulse showed a vagotonic response. The anemic group showed an increase in pulmonary ventilation less than the normal group. Dyspnea was not present in the three patients studied. The resting pulse, although higher than the other three groups, showed a vagotonic reaction. The reduced increase in pulmonary ventilation, following the standardized exercise, in the anemic group, is associated with an increased tolerance for carbon dioxid as well as by a raised carbon dioxid dissociation curve. The more marked the anemia, the closer the carbon dioxid dissociation curve approaches the carbon dioxid dissociation curve for normal plasma. In addition, it is indicated that the more severe the anemia the greater the tolerance for rebreathing carbon dioxid. In each of the pathologic groups studied, there were persons who responded quite like normal individuals, other persons who reacted in a very abnormal manner, as well as variations between these two.

Illinois Medical Journal, Oak Park

48: 85-168 (Aug.) 1925

Suggested Analogy Between Hyperthyroidism and Gastric Ulcers. G. W. Crile, Cleveland.—p. 109.
Effective Treatment of Osteomyelitis by Aluminum-Potassium Nitrate. M. Thorek, Chicago.—p. 112.
Diagnosis and Treatment of Gallbladder Disease — Medical Aspects. J. Phillips, Cleveland.—p. 123.
Treatment of Gonorrhea. A. E. Mowry, Chicago.—p. 128.
Intravenous Use of Mercurochrome-220 Soluble. C. S. Bueher and R. S. Funk, Champaign.—p. 135.
Preventable Complication at Time of Operation and During Healing Process. W. A. Fisher, Chicago.—p. 136.
Wassermann Test. M. B. Wolff, Chicago.—p. 143.
Convalescence from Diseases of Childhood. M. P. Borovsky, Chicago.—p. 145.
Abuse of Medical Charity. B. H. Breakstone, Chicago.—p. 150.
Sudden Death from Arsphenamin. H. M. Hedge, Chicago.—p. 157.
Danger of Disease Transmission Through Dentistry Prevented Through New Sterilizer Device. P. J. L. Nemmers, Chicago.—p. 159.

Iowa State Medical Society Journal, Des Moines

15: 423-472 (Aug. 10) 1925

Hidden Cause of Sudden Death. A. D. Woods, State Center.—p. 423.
Diagnosis and Treatment of Neurosyphilis. W. E. Ash, Council Bluffs.—p. 428.
Modern Aids to Labor. W. B. Hendry, Toronto, Canada.—p. 434.
Systemic Aspects of Achylia Gastrica. L. R. Crummer, Omaha.—p. 437.
Movable Kidney. W. L. Downing, LeMars.—p. 441.
Employment of Buffer Solutions in Acid Intoxications and Acidosis. F. A. Hecker, Ottumwa.—p. 446.
Splenic Anemia. W. D. Runyon, Sioux City.—p. 448.
When and What to Eat. J. A. Pinkerton, Traer.—p. 450.

Journal of Immunology, Baltimore

10: 643-739 (July) 1925

*Bacterial Anaphylaxis. III. N. P. Sherwood and O. O. Stoland, Lawrence, Kan.—p. 643.
Acquired Immunity in Silkworms. R. W. Glaser, Princeton, N. J.—p. 651.
Heat Produced by Reactions of Antigens with Antibodies. S. Bayne-Jones, Rochester, N. Y.—p. 663.
*Immunologic Studies in Tuberculosis. III. Allergic Reactions Obtained in Animals Sensitized with Killed Tubercle Bacilli. S. A. Petroff and F. W. Stewart, Trudeau, N. Y.—p. 677.
Significance of Bacterial Allergy as Sign of Resistance. H. Zinsser, H. K. Ward and F. R. Jennings, Jr., Boston.—p. 719.
*Bacterial Allergy; Allergic Reactions of Hemolytic Streptococcus. H. Zinsser and F. B. Grinnell, Boston.—p. 725.
Specific Part of Heterogenetic Antigen. K. Landsteiner and P. A. Levene, New York.—p. 731.
*Flocculation Reaction with Immune Serums Produced by Injections of Organ Emulsions. J. van der Scheer, New York.—p. 735.

Bacterial Anaphylaxis.—As a result of their observations Sherwood and Stoland conclude that the smooth muscle reaction of Dale is not a necessary criterion of sensitization.

Experimental Allergy in Tuberculosis.—An attempt has been made by Petroff and Stewart to repeat with animals sensitized by dead tubercle bacilli the various allergic phenomena which in the past have been observed in animals previously infected with living tubercule bacilli. Preliminary conclusions drawn are: (1) animals sensitized with dead tubercle bacilli give an allergic reaction which in its essentials does not vary from that observed in infected aniamls, and (2) the severity of the reaction depends in the degree of the hypersensitiveness.

Experimental Streptococcus Allergy.—Zinsser and Grinnell assert that streptococcus allergy is easily produced in guinea-pigs. The most effective method consists in injecting intraperitoneally whole living streptococci and the most potent material for the demonstration of such allergy by skin reaction is the broth filtrate of streptococcus cultures.

Flocculation Reaction with Immune Serums.—Serums flocculating alcoholic organ extracts were obtained by Scheer in several cases in which no reactions were observed with the same serums before injections.

Journal of Laboratory and Clinical Medicine, St. Louis

10: 785-963 (Aug.) 1925

Pernicious Anemia. J. W. Shuman, Los Angeles.—p. 875.
*Action of Nitrites on Pulmonary Circulation. I. Nitroglycerin. G. R. Love and H. McGuigan, Chicago.—p. 882.
*Id. II. Sodium and Amyl Nitrite. G. R. Love, H. McGuigan and C. E. Wiley, Chicago.—p. 885.

Education as Cure for Present-Day Evils in Clinical Pathology. J. A. Kolmer, Philadelphia.—p. 891.
Rôle of Clinical Pathologist in Hospital Efficiency. M. T. MacEachern, Chicago.—p. 898.
Study of Tissue Autolysis in Vivo. II. Toxic Material. E. C. Mason and E. C. Davidson, Detroit.—p. 906.
*Studies with B. Acidophilus and B. Bulgaricus. I. Implantation of B. Bulgaricus. N. Kopeloff and P. Beerman, Ward's Island, N. Y. —p. 914.
Physicochemical Aspects of Hemolysis. III. R. Rockwood and E. C. Mason, Rochester, Minn.—p. 917.
Method for Instantaneous Photomicrography of Skin Capillaries. C. Sheard and G. E. Brown, Rochester, Minn.—p. 925.
An Improved Staining and Drying Plate. H. C. Sweaney, Chicago.—p. 929.
Micromethod for Enumeration of Microcolonies. F. T. Briedigan and R. M. Chiang, Battle Creek, Mich.—p. 921.
Sources of Error in Blood Urea and Nitrogen Determination. E. L. Sevringhaus and F. Hipple, Mendota, Wis.—p. 934.
*Simple Method for Estimation of Free Hydrochloric Acid in Gastric Contents. E. Hollander, New York.—p. 935.
Technical Improvements in Urea Distillation by Folin-Wu Method. H. E. Butka and F. E. Meisner, Los Angeles.—p. 937.

Action of Nitroglycerin on Pulmonary Circulation.—The effect of nitroglycerin on pulmonary arterial pressure and excised vessels is discussed by Love and McGuigan. Nitroglycerin in small doses often produces a rise of pulmonary pressure due to increased cardiac output from acceleration and increased venous return. Nitroglycerin reduces a high pulmonary pressure apparently by dilating the pulmonary arteries. It does not stimulate excised pulmonary arteries of dogs. Thus the action of nitroglycerin is the same upon pulmonary and systemic arteries, although less marked on the pulmonary vessels. The action on pulmonary pressure is, however, often counterbalanced or overbalanced by the secondary effects of its action on the systemic vessels. The action of nitroglycerin on pulmonary circulation does not justify its administration in the treatment of pulmonary hemorrhage. Experimentally, at least, it appears to be contraindicated in hemoptysis.

Action of Sodium and Amyl Nitrite on Pulmonary Circulation.—Love, McGuigan and Wiley found that amyl and sodium nitrite, particularly amyl nitrite, often raise the pulmonary pressure in dogs, due to an augmented cardiac output from increased venous return and cardiac acceleration. Large doses of sodium nitrite often produce a rise of both carotid and pulmonary pressures with cardiac irregularities, which sometime terminate in ventricular fibrillation. On excised pulmonary arteries, amyl nitrite and small doses of sodium nitrite produce relaxation. Large doses of sodium nitrite cause a contraction of these vessels, which it is suggested is caused by irritation and not true stimulation. The action of amyl and sodium nitrite on the pulmonary arteries is the same, though less marked, as on the systemic vessels; however, the effect on pulmonary pressure is often counterbalanced or overbalanced by the secondary effects of the action on the systemic circulation.

Studies with Bacillus Acidophilus and Bacillus Bulgaricus.—Of twelve human subjects receiving 1 liter of *B. bulgaricus* milk for from ten to fifteen days, only two revealed the presence of *B. bulgaricus* in the feces. In one of these subjects the number of *B. bulgaricus* present was so small as to be negligible. Since the bacterial content of the milk fed was only 50,000,000 per cubic centimeter, it is believed by Kopeloff and Beerman that further corroboration of the failure to implant *B. bulgaricus* is required, when using the same dosage of milk containing about 200,000,000 per cubic centimeter, as is recommended in the feeding of *B. acidophilus*.

Estimation of Free Hydrochloric Acid in Gastric Contents.—Hollander uses bibulous paper which has been dipped in an alcoholic solution of 0.25 per cent. of dimethylamidoazobenzol and dried. This test paper when dipped into weak solutions of hydrochloric acid gives excellent shades of color. The range of color obtained is much greater than that given by congo paper. Five colors were selected representing acidities of 10, 20, 30, 40 and 50 c.c. of tenth-normal hydrochloric acid per hundred cubic centimeters of water. These colors have been made into a chart similar to a Tallqvist hemoglobin scale.

Kentucky Medical Journal, Bowling Green

23: 392-437 (Aug.) 1925

Prenatal Care. H. M. Rubel, Louisville.—p. 395.
Pituitrin in Obstetrics. T. K. Vanzandt, Louisville.—p. 399.
Forceps. W. T. McConnell, Louisville.—p. 401.
Indications for Cesarean Section. H. A. Davidson, Louisville.
The Baby. F. J. Kiefer, Louisville.—p. 405.
Heart Disease. J. R. Morrison, Louisville.—p. 412.
Syphilitic Involvement of Vascular System. B. Willmott, Louisville.—p. 416.
Removal of Seventy-Four Pound Ovarian Cyst Under Anesthesia. E. S. Allen, Louisville.—p. 421.
Hereditary Syphilis Traced Through Four Generations. C. Pope, Louisville.—p. 424.
Acute Glaucoma; Case. J. J. Wynn, Louisville.—p. 427.
Severe Anaphylactoid Reaction Following Administration of Antirabic Vaccine. M. Y. Marshall, Henderson.—p. 429.
Von Jaksch's Infantile Anemia. J. W. Bruce, Louisville.—p. 429.
Traumatic Rupture of Spleen: Splenectomy. L. W. Frank, Louisville. —p. 431.
Reflex Pains About Head and Face. M. C. Baker, Louisville.—p. 433.

Medical Journal and Record, New York

122: 185-244 (Aug. 19) 1925

Repair of Inoperable Soft Palate by Utilizing Faucial Tonsils. J. E. Sheehan, New York.—p. 185.
Results of Ultraviolet Therapy in Certain Tuberculous and Other Cases. F. A. Davis, Boston.—p. 188.
Treatment of Fracture of Femur. R. Whitman, New York.—p. 193.
Whitman Reconstruction Operation on Hip Joint for Ununited Intracapsular Fracture. M. B. Cooperman, Philadelphia.—p. 194.
Hanot's Cirrhosis. K. Murray, Battle Creek, Mich.—p. 196.
Control of Morbidity and Mortality of Diphtheria. D. M. Lewis, New Haven, Conn.—p. 199.
Pituitary Type of Headache. H. R. Harrower, Glendale, Calif.—p. 201.
Mastoid Operation. J. Friedman and S. Greenfield, Brooklyn.—p. 204.
Dental Infections and Heart Irregularities. S. C. Smith, Philadelphia. —p. 207.
Influence of Soft Parts on Blood Pressure. C. B. Masson, New York. —p. 210.
Calcified Pericardium in Case of Peptic Ulcer; Case. C. W. Rainey, Chicago.—p. 212.
Pulse and Blood Pressure Variations During Exercise and Their Bearing on Myocardial Efficiency. G. H. Robertson, Wanganui, New Zealand.—p. 213.
Hypertrophy of Heart. W. D. Reid, Boston.—p. 219.
Classification of Heart Murmurs; Extracardiac Murmurs. J. Epstein, New York.—p. 221.
Treatment of Hay-Fever. Study of 114 Cases. C. A. Spivacke, New York.—p. 223.
Historical Medicine. J. Wright, Pleasantville, N. Y.—p. 226.
Experiments on Man Demonstrating Dynamogenic Power of Liquid Extract of Animal Testicles. M. B. Sequard.—p. 227.

New Jersey Medical Society Journal, Orange

22: 231-278 (July) 1925

General Practitioner and Fracture Situation. J. J. Moorhead, New York. —p. 231.
Uremia. I. Disturbance of Nitrogen Elimination. R. Floyd, New York. —p. 239.
Appendicitis. B. H. Garrison, Red Bank.—p. 249.
Melanotic Carcinoma. L. L. Leonard and W. G. Hermann, Asbury Park.—p. 255.
Spectemur Agendo. A. S. Harden, Newark.—p. 262.

Philippine Journal of Science, Manila

27: 161-288 (June) 1925

Five New Species of Chinese Plants. E. D. Merrill.—p. 161.
Poisonous and Worthless Fishes. A. W. C. T. Herre.—p. 167.
Bees from Samar, P. I. T. D. A. Cockerell and N. Leveque.—p. 169.
Diptera of Medical and Veterinary Importance. I. Types of Older Authors in Continental Museums. W. S. Patton.—p. 177.
Genus Andes Stal. F. Muir.—p. 201.
Helminth Parasites of Hogs in Philippine Islands. B. Schwartz.—p. 227.
New Genus of Wasp Parasites of Philippine Islands. W. Schultze.—p. 235.
Comparative Resistance to Foot Rot of Citreus Species as Root Stocks. H. A. Lee.—p. 243.
Tenebrionids of Indo-Malay Zone. H. Gebien.—p. 257.

Philippine Islands Medical Association Journal, Manila

5: 157-180 (June) 1925

*Cancer in Philippine General Hospital. P. C. Guazon.—p. 157.
Anti-Allergic Treatment of Bronchial Asthma. J. C. Leveriza.—p. 161.
Industrial Fatigue. W. Pascual.—p. 168.

Cancer Among Filipinos.—Guazon analyzes 373 cases of cancer occurring among Filipinos, representing an incidence of cancer of 1.98 per cent. in males and 6.1 per cent. in females. The majority of these cases occurred between 30

and 60, 107 cases among the men and 179 cases among the women. Among the men the head was the seat of the cancer in forty-seven cases, the abdomen in seventy-seven cases. The stomach (15 per cent.), cheek (12 per cent.), liver (11 per cent.), penis (12 per cent.), and neck (8 per cent.), were the most frequently involved organs in men, and breast (26 per cent.), uterus (25 per cent.), cheek (17 per cent.), and neck (11 per cent.), in women. Only about 25 per cent. of all cases were operable. Only the operable cases have been treated radically by operation. In some a combined form of treatment has been tried, in others only radiation by roentgen ray or radium has been used. The treatment was a failure in more than 50 per cent. of the cases. Of the male patients 15 per cent. recovered; 22 per cent. and 19 per cent., respectively, were improved; 13 and 31 per cent., respectively, died.

Southwestern Medicine, Phoenix, Ariz.

9: 293-334 (Aug.) 1925

Analysis of Forty-Eight Cases of Pelvic Fracture. W. B. Watts, Miami, Ariz.—p. 293.
Lung Conditions Found in Industrial Work Other Than Tuberculosis and Silicosis. N. C. Bledsoe, Bisbee, Ariz.—p. 297.
Twenty-Five Years of Fractures. F. T. Wright, Douglas, Ariz.—p. 300.
Problems of Industrial Surgeon. G. A. Bridge, Bisbee, Ariz.—p. 302.
Industrial Hernia. C. R. Swackhamer, Superior, Ariz.—p. 304.
Problems in Prostatectomies. R. V. Day, Los Angeles.—p. 307.
Pathology of Anuria. C. S. Vivian, Phoenix, Ariz.—p. 311.
Phases of Urologic Diagnosis. W. G. Schultz, Tucson, Ariz.—p. 313.
Nephritis. S. C. Davis, Tucson, Ariz.—p. 311.
Intra-Ocular Hemorrhage. D. F. Harbridge, Phoenix, Ariz.—p. 318.
Conservative Obstetrics. H. A. Reese, Bisbee, Ariz.—p. 320.
Tuberculosis of Cervical and Thoracic Glands. W. W. Britton, El Paso, Texas.—p. 322.

Surgery, Gynecology and Obstetrics, Chicago

41: 129-254 (Aug.) 1925

*Operation for Total Removal of Cerebellopontile (Acoustic) Tumors. W. E. Dandy, Baltimore.—p. 129.
*End-Results in One Hundred Cases of Anterior Poliomyelitis Subjected to Operation. S. W. Boorstein, New York.—p. 149.
Edema and Hypertrophy of Cervix Uteri During Puerperium. A. Turenne, Montevideo, Uruguay.—p. 156.
Cystic Inflammation of Vesical Neck and of Prostatic Urethra. J. A. Lazarus, New York.—p. 162.
Jaundice. J. B. Deaver, Philadelphia.—p. 166.
*Fetus Amorphus; Case. J. P. Simmonds and G. A. Gowen, Chicago. —p. 171.
Iniencephalus—Cause of Extreme Dystocia. W. A. N. Dorland, Chicago. —p. 180.
Enteroliths and Diverticula, Especially of Large Bowel; Case. M. F. Porter, Fort Wayne, Ind.—p. 185.
Gas Gangrene in Civil Practice. Three Cases. S. T. Fortune and D. M. Vickers, New York.—p. 187.
*Carcinomatous Ovarian Teratoma with Premature Puberty and Precocious Somatic Development. R. H. Harris, Battle Creek, Mich.—p. 191.
Etiology of Pre-Eclamptic Toxemia from Clinical Aspect. E. Cary, Chicago.—p. 194.
*Tannic Acid in Treatment of Burns. E. C. Davidson, Detroit.—p. 202.
*Use of Paraffin as a Primary Dressing for Skin Grafts. F. A. Coller, Ann Arbor, Mich.—p. 221.
Oil Sterilization of Edged Instruments. F. H. Lahey and R. L. Mason, Boston.—p. 226.

Operation for Removal of Cerebellopontile Tumor.—An operative procedure is presented by Dandy by which cerebellopontile (acoustic) tumors can be removed completely. After a thorough and carefully guarded intracapsular enucleation, the capsule of the tumor is painstakingly dissected from the brain stem.

Astragalectomy.—Boorstein's review leads him to conclude that for stabilization of the foot, astragalectomy is the best operation as to the result in both function and shape. After an astragalectomy, the muscles throughout the entire lower extremity, even the thigh muscles, improve immensely. Open, instead of closed (subcutaneous), tenotomy should be performed. Transplantation of biceps for quadriceps gives very satisfactory results. Soutter's operation for transplantation of hip flexors is a very useful and satisfactory operation for cases of even long duration. Steindler's operation of transplantation of plantar muscles gives good results, but one must be sure to stretch the foot considerably and use a brace for a long time. Gallie's operation of tendon fixation has not given desired results. Tendon transplantation fails if a weak muscle is expected to do the work of a strong muscle.

Fetus Amorphus.—A specimen of one of the rarer types of fetus amorphus is described in detail by Simmonds and Gowen. This was a kidney-shaped mass covered with skin, with a growth of hair on one end, a rudimentary mouth and eye, and the rudimentary base of a skull and three vertebrae. The mass was composed chiefly of edematous connective tissue, with blood vessels and fat, and with a few fibers of striated muscle and a very small mass of glia cells and a very few ganglion cells.

Carcinomatous Ovarian Teratoma.—A girl, aged 5 years and 10 months, who had a carcinomatous teratoma of the right ovary, associated with sexual and somatic precocity, came under Harris' care in 1914. The tumor was removed the following day, and now, after ten years and eight months, this patient is in good health and free from discoverable recurrence.

Tannic Acid Treatment of Burns.—Davidson recommends the use of tannic acid in the treatment of burns. The burned area is covered with dry sterile gauze pads which are held in place by sterile gauze bandages. This dressing is soaked with a 2.5 per cent. aqueous solution of tannic acid. It is essential that the tannic acid solution be made up fresh just before use, because it deteriorates on standing with the formation of the far less astringent gallic acid. In order to prevent the deep caustic tissue injury found by Schuetz to follow the application of concentrated tannic acid, small sections of the dressing have been opened for inspection at the end of twelve hours, eighteen hours and twenty-four hours. As soon as the part is found to have assumed a light brown color, all dressings are removed. In order to facilitate removal of the dressing without pain to the patient and without causing further trauma, it has been found desirable to wet the gauze with fresh tannic acid solution shortly before this is done. The wound is thereafter left exposed to the air but is carefully protected from mechanical injury, chilling and bacterial invasion by a suitable cradle draped with sterile linen. In the more serious cases, artificial heat has been supplied by placing within the cradle so prepared one or more ordinary electric light bulbs. In a few cases 5 per cent. tannic acid ointment (made with equal parts of petrolatum and lanolin as a base) was substituted for the aqueous solution. Although it appeared to have a definitely beneficial effect, it is far less efficacious than the former. The chief value of the ointment is in its use about the eyes, where the astringent solution cannot be used with entire safety. One of the most essential features of the management of all burn cases is that of keeping up the fluid balance in the body. This is accomplished by forcing fluids by mouth, where possible, or by hypodermoclysis, proctoclysis or intravenous infusions according to the special indications in each case. Blood transfusion has been employed in some of these cases, apparently with favorable effects.

Primary Paraffin Dressing for Skin Grafts.—After the skin grafts are in place Coller covers them with paraffin. Flexible paraffin of the type used in the treatment of burns is applied as a spray by means of the paraffin atomizer. The entire grafted area, and a margin of normal skin at its periphery, is covered with a layer of paraffin at least 1.5 mm. in thickness. The grafts are thus firmly anchored and their displacement by subsequent manipulations is unlikely. The chief argument against the use of paraffin is that it seals the wound, causing a retention of secretion which will elevate the graft. Coller has not found this to be true so much as is the case when other impervious substances are used.

Tennessee State Medical Association Journal, Nashville

18: 29-57 (June) 1925

American Medical Association and Periodic Health Examination. W. D. Haggard, Nashville.—p. 29.
Treatment of Acute Suppurative Appendicitis. C. Brower and J. D. Lester, Nashville.—p. 33.
Redundant Colon; Two Cases. R. S. E. Murray, National Sanatorium. —p. 37.
Diagnosis of Exophthalmic Goiter. W. C. Chaney, Memphis.—p. 44.
Hospital Standardization. C. N. Cowden, Nashville.—p. 51.
Multiple Pigmented Hemorrhagic Sarcoma of Kaposi. H. King, Nashville.—p. 55.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 241-278 (Aug.) 1925

What Should Be Standard of Purity of Milk? I. Bacteriologic Standard. R. S. Williams.—p. 241.
Id. II. Point of View of Health Officer. W. G. Savage.—p. 244.
Id. III. Point of View of Clinician. E. Pritchard.—p. 245.
By What Means Can Pure Milk be Obtained and at What Cost? I. Point of View of Producer. W. Buckley.—p. 246.
Id. II. Point of View of Veterinary Surgeon. G. P. Male.—p. 249.
Id. III. Point of View of Distributor. J. H. Maggs.—p. 251.
Treatment of Hare-Lip. H. F. MacAuley.—p. 253.
*Uses of Coelioscopy. A. R. Short.—p. 254.

Coelioscopy.—The advantages of coelioscopy over exploratory laparotomy as Short sees them are: (1) it can be done without discomfort under local anesthesia; (2) the incision is so small that it is only necessary to keep the patient in bed for a day or two; (3) no special instruments are needed; (4) it can be done at the patient's home; (5) it is available when it would be dangerous to perform laparotomy.

China Medical Journal, Shanghai

39: 575-666 (July) 1925

Points of Importance in Dealing with Leprosy Problem. F. Muir.—p. 575.
*Survey of Leprosy in China. H. Fowler.—p. 584.
Present Status of Treatment for Leprosy. V. H. Heiser.—p. 591.
Modern Treatment of Leprosy in China. H. Fowler.—p. 594.
*Treatment of Leprosy in Bangkok with Ethyl Esters from Hydnocarpus Anthelmintica. H. R. O'Brien and B. M. Runchaiyon.—p. 600.
*Nature of Leukocytosis Induced in Rabbit by Administration of Chaulmoogra Oil and Its Derivatives. B. E. Read.—p. 605.
*Preparation and Use of Ethyl Esters from Chaulmoogra Oils. B. E. Read and C. T. Feng.—p. 612
*Oral Administration of Chaulmoogra Oil in Treatment of Leprosy. B. E. Read.—p. 619.
Leprosy. C. N. Davis.—p. 632.
Century of Medical Missions in China. J. L. Maxwell.—p. 636.

Leprosy in China.—Fowler has found it impossible to estimate even approximately the total population of any particular leper area in China. The largest leper population is to be found in the Province of Kwangtung, and extensive tracts of China give no trace of the disease. Leprosy seems to be specially associated with waterlogged and ill-drained areas of the country. With the exception of Kwangtung and parts of Fukien no provision whatever is made by the local authorities for the isolation or support of the leper. But for the aid rendered by the Christian church the lot of the leper in China today would be hopeless. Today, after centuries of empirical and medieval treatment of leprosy by Chinese physicians and quacks, modern scientific methods, coupled with a form of voluntary segregation on the part of the lepers themselves, happily give good prospects of changing the entire outlook of China's lepers and ultimately of ridding China of leprosy.

Treatment of Leprosy in Bangkok.—The ethyl esters of the oil from the fruit of *Hydnocarpus anthelmintica* were used by O'Brien and Runchaiyon in the Red Cross clinic and hospital in Bangkok for weekly intramuscular injections in leprosy cases. After two years 357 reexaminations were made. Improvement was obtained in 71.1 per cent. of the cases, which was marked in degree in 22.7 per cent.

Nature of Leukocytosis Induced by Chaulmoogra Oil.—The hemolysis previously observed after the administration of toxic doses of chaulmoogra oil and its preparations was found by Read to be negligible or insignificant after therapeutic doses. There is observed a leukocytosis accompanied by a large number of monocytes in the circulating blood, both after large and small doses of the various preparations of this drug. Coincident with the occurrence of large monocytes in the circulating blood, showers of giant macrophages were found in blood from the right heart. These macrophages are known to be histocytes, originating in the liver and possibly in other organs, they travel into the right heart bearing stained fat, they seem to be filtered off in the lungs and thence migrate to the lymph stream. The leukocytosis induced by chaulmoogra oil is a means of transport whereby the drug is brought into direct contact with the bacilli in the lymph circulation.

Preparation of Ethyl Esters from Chaulmoogra Oils.—An account is given by Read and Feng of the present method of preparation of the ethyl esters in Peking. Fractionation of the esters yielded the major portion of the hydnocarpus fraction between 184 and 190 C. at a reduced pressure of 2 mm. Directions are given for the removal of free fatty acids liable to cause painful reactions when the drug is administered intramuscularly. Camphor and creosote are discussed as adjuvants in the treatment of leprosy. The solubility of camphor in the mixed ethyl esters was found to be 33.74 per cent.

Chaulmoogra Oil by Mouth in Leprosy.—Read suggests that when chaulmoogra oil is administered orally it should be given in doses of about 6 drops once daily or less frequently if progress can thereby be obtained. There appears to be indicated the use of magnesium salts as a laxative and the use of calcium salts as an adjuvant in treatment with chaulmoogra oil or its esters.

Indian Medical Record, Calcutta

45: 191-238 (July) 1925

*Curative Value of Autolyzed Tubercle Bacillary Culture Vaccine in Pulmonary Tuberculosis and Leprosy. R. Row.—p. 191.
Problem of Tuberculosis. N. R. Sengupta.—p. 197.
Results Obtained in Treatment of Surgical Tuberculous Lesions by Various Agents. V. G. Rele and P. V. Gharpure.—p. 200.
Longevity of People Who Have Been at One Time of Their Lives Declared Tuberculous. R. B. G. Chatterjee.—p. 202.
Tuberculosis of Skin and Tuberculides. A. Gupta.—p. 204
Tuberculosis; Phlyctenular Kerato-Conjunctivitis. B. Bhaduri.—p. 215.
Treatment and Prevention of Tuberculosis. R. K. Sen.—p. 217.
Tuberculin Treatment. S. K. Mukherji.—p. 220.
Some Etiolologic Factors of Tuberculosis in India in General and Bengal in Particular. A. Roy.—p. 229.
Pulmonary Tuberculosis. P. Ganguli.—p. 233.

Vaccine Therapy of Pulmonary Tuberculosis and Leprosy.—The vaccine which has been applied by Row in the treatment of these infections is an emulsion of a four to six weeks' growth of tubercle bacilli on a solid medium. This vaccine contains a fat splitting ferment and a feeble proteolytic enzyme. The antigenic property of this emulsion, as seen from the complement fixation tests with the serum of patients suffering from tubercle infection, has been found to be definitely positive, though feebly so in some cases, while that for leprosy is very strongly marked. As to results from its use—they have been very promising. In nerve leprosy the cordlike thickened nerves have come to the normal after about thirty injections. The anesthetic patches have disappeared in a few weeks, the atrophy has been controlled and the trophic ulcers made to heal rapidly. The rationale of the action of the autolyzed vaccine is purely speculative and seems to be the result of the usual production of protein immune bodies or a stimulation of their production. These bodies literally starve the tubercle bacilli leaving the acid-fast material to be disposed of by the sputum or be otherwise destroyed. There is evidence of this in the character of the tubercle bacilli in the sputum of cases showing improvement.

Journal of Hygiene, London

24: 1-110 (July) 1925

Plague Fleas. L. Fabian Hirst.—p. 1.
*Rôle of Twort-D'Herelle Phenomenon in Epidemics of Mouse Typhoid. W. W. C. Topley, J. Wilson and E. K. Lewis.—p. 17.
*Relationship of Paratyphoid Fever to Food Poisoning Outbreaks. W. G. Savage and P. B. White.—p. 37.
Experimental Study of Epidemiology. M. Greenwood and W. W. C. Topley.—p. 45.

Action of Bacteriophage in Epidemics.—The observations made by Topley, Wilson and Lewis do not suggest that the presence of the bacteriophage will, in itself, prevent the epidemic spread of infection, check an epidemic when it has once started, or appreciably reduce the mortality among the population at risk. The authors do not share d'Herelle's optimism as to the probable results of the wholesale administration of the lytic principle in a public water supply. They do not suggest that the Twort-d'Herelle phenomenon has no significance in the epidemic spread of disease, but it does not appear to them that the problem is the simple and straightforward one envisaged by d'Herelle. The results of the last experiment of this series are in substantial agreement with

d'Herelle's experiments on barbone in cattle, so far as they concern the action of the lytic filtrate in causing an immunizing response.

Relationship of Paratyphoid Fever to Food Poisoning Outbreaks.—Savage and White believe that owing to faulty classification and terminology of bacterial types, it is very common to ascribe outbreaks of food poisoning to *B. paratyphosus* B, the common cause of paratyphoid fever. If such a conception is true, it is obvious that *B. paratyphosus* B can at one time cause paratyphoid fever, at another an outbreak of food poisoning. Further, one would expect in outbreaks of either condition that some cases would be of the one clinical type while others would exhibit the other. In particular in outbreaks of paratyphoid fever in which the vehicle of infection was some form of food, it is to be anticipated, on this view, that a considerable proportion of the cases would be of acute food poisoning type. This conception is one with which the authors entirely disagree.

Quarterly Journal of Experimental Physiology, London

15: 1-102 (March) 1925

Alterations in Form of Mammalian Erythrocytes in Hypotonic Plasma. E. Onder and W. G. Millar.—p. 1.
*Physiology of Gastric Secretion. 1: Gastric Secretion by Local (Mechanical and Chemical) Stimulation. R. K. S. Lim, A. C. Ivy and J. E. McCarthy.—p. 13.
*Id. II. Intestinal Phase of Gastric Secretion. A. C. Ivy, R. K. S. Lim and J. E. McCarthy.—p. 55.
Action of Epinephrin on Perfused Fish Heart. A. D. MacDonald.—p. 69.
*Effect of Lesions of Hind and Midbrain on Micturition in Cat. F. J. F. Barrington.—p. 81.

Gastric Secretion by Local Stimulation.—Lim, Ivy and McCarthy report on their observations of the gastric phase. They found that mechanical distention of the stomach stimulates gastric secretion in man and dog, in the latter with and without vagi intact. The application of certain substances, such as raw meat juice, B-alanin, and histamin when applied to the gastric mucosa in quantities insufficient to cause distention excites gastric secretion. Strong sodium chlorid solutions, glucose (50 per cent.) solution, and Liebig's meat extract stimulate, but not to the extent that the above substances do, the formation of mucus being markedly augmented. Cane sugar, starch and fats do not stimulate when applied. Water stimulates when used in a quantity sufficient to cause adequate distention. Water is absorbed from the stomach of unanesthetized animals if permitted to remain for one half to one hour. The stimulation of gastric secretion by mechanical distention, or by the submaximal application of certain chemicals, is inhibited by the hypodermic administration of 1 mg. atropin and by the introduction of fats into the intestine, which agents are known to inhibit the secretion that occurs after the ingestion of a meal. Fat applied to the gastric mucosa only slightly inhibits the action of the above excitants. The mechanism concerned in gastric secretion is discussed and a wrong hypothesis is suggested. It is said that these observations offer a satisfactory explanation for at least a part of the hypernormal gastric secretion ("hypersecretion") that is observed to occur in cases of pyloric obstruction.

Intestinal Phase of Gastric Secretion.—The observations recorded by Ivy et al. are said definitely to disprove the specific pyloric or gastrin theory as originally stated by Edkins. A vascular hypothesis is tentatively suggested to explain the mechanism of intestinal stimulation. The results demonstrate that the intestine as a pathway for the stimulation of the gastric glands must be considered in an analysis of the factors concerned in the genesis of gastric secretion. In short, the existence of an intestinal phase is proved.

Effect of Hindbrain and Midbrain Lesions on Micturition.—Barrington found that destruction of a small part of the brain just ventral to the internal edge of the superior cerebellar peduncle from the level of the middle of the motor nucleus of the fifth nerve behind to the level of the anterior end of the hindbrain in front is followed by a permanent inability to empty the urinary bladder if the lesion is bilateral, but not if it is unilateral. Destruction of the midbrain from the ventral half of the side of the posterior end of the aqueduct outward to just beyond the mesencephalic root of the fifth nerve is followed when the lesion is bilateral by a permanent loss of consciousness of wanting to micturate or defecate, but does not impair the performance of either of these functions. A lesion in the position of the last, but rather more extensive, also produces frequency of micturition.

15: 103-200 (May) 1925

*Corpus Luteum Extracts and Ovulation in Rabbits. W. P. Kennedy.—p. 103.
Significance of Elastic Tissue of Human Fetus. E. E. Hewer.—p. 113.
*Action of Pituitary Extract on Urinary Secretion. N. S. Craig.—p. 119.
Studies on Pituitary. V. Avine Depressor Response. L. T. Hogben.—p. 155.
Id. VI. Localization and Phyletic Distribution of Active Materials. L. T. Hogben and G. R. DeBeer.—p. 163.
Reactions of Pupils in Chloralised Animal. R. J. S. M'Dowall.—p. 177.
New Methods of Demonstrating Changes in Tone of Arterioles. R. J. S. M'Dowall and B. L. Worsnop.—p. 181.
*Hematocrite Method of Measuring the Volume of Erythrocytes. W. G. Millar.—p. 187.
*Action of Pituitary Extracts on Intestinal Muscle. A. D. MacDonald.—p. 191.

Corpus Luteum Extracts Inhibit Ovulation.—Kennedy states that a substance or substances can be extracted in the cold from the corpus luteum of the cow, in the fresh or desiccated state, which inhibits ovulation in the rabbit, if injected intravenously in sufficient dosage. Long-continued dosage with these extracts may be correlated with more or less marked degenerative changes in the ovary, and to a progressively less degree in the liver and suprarenal glands, none being observed in the kidney. In the experimental animals in which the point was tested, ability to ovulate was not recovered in three months from the cessation of treatment. The fertility of the male controls was not impaired by parallel treatment. The toxic effects produced were insufficient to cause convulsions or death.

Action of Pituitary Extract on Urinary Secretion.—Craig summarizes the results of his experimental work as follows: In anesthetized animals, intravenous administration of pituitary extract produces a definite diuresis. Continuous intravenous administration of pituitary extract in 0.9 per cent. saline solution produces the same result. In unanesthetized dogs, pituitary extract administered subcutaneously controls the diuresis which normally would result from the administration of water or physiologic sodium solution by mouth. If concentrated saline solution is used, diuresis results. A diuresis produced by drinking 230 c.c. of 5 per cent. urea solution was prolonged, but its onset was not delayed, by subcutaneous administration of pituitary extract. Delay in the absorption of fluid from the alimentary tract, if it occurs after pituitary extract administration, is sufficient to account for a delay in the onset of the diuresis for three and a half hours. A subcutaneous injection of pituitary extract controls a diuresis produced by the intravenous administration of 120 c.c. of Ringer's solution at the rate of 4 c.c. per minute; if, however, the intravenous administration is given at the rate of 12 c.c. per minute, no antidiuretic effect occurs. The hemoglobin percentage in human beings is not appreciably altered by the drinking of large quantities of water. If, however, the drinking of large quantities of water is immediately preceded by a subcutaneous injection of pituitary extract, a definite reduction in the hemoglobin percentage occurs during the first two hours of the experiment.

Measuring Volume of Erythrocytes.—Millar is of the opinion that the speed of centrifuging has an important bearing on the accuracy of measuring the volume of erythrocytes by the hematocrit. A method is described, based on the comparison of readings at different speeds of rotation, whereby the actual cell volume may be obtained by the hematocrit, which removed the chief objection to this instrument.

Action of Pituitary Extracts on Intestinal Muscle.—Doubt is thrown by McDonald's studies on the commonly held view that the pituitary gland contains a general stimulant of plain muscle fibers, since for the isolated intestine there is no evidence of action in such concentration nor of such specificity as would justify that belief.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: 1089-1143 (July 17) 1925

*Nature of Drug Eruptions. G. Milian.—p. 1090.
Lines Like Striae of Pregnancy on Chest of Epileptic Girl. Achard and Bloch.—p. 1093.
Spontaneous Cure of Lung Abscess. Achard and Mouzon.—p. 1094.
*Heliotherapy in Marasmus; in Joint Tuberculosis; After Pneumothorax. Armand-Delille and Linossier.—p. 1097; 1099; 1100.
Case of Multiple Neuroma. P. Schiff.—p. 1100.
Chronic Dermatitis from Sunlight. P. Carnot and E. Terris.—p. 1105.
Endocarditis of Typhoid Origin. Lemierre et al.—p. 1113.
*Immunization of Infants Against Diphtheria. Ribadeau-Dumas et al.—p. 1121.
Vaccination of Mother Ineffectual in Prophylaxis of the New-Born. Ribadeau-Dumas et al.—p. 1124.
Pseudohydrothorax with Ascites. A. Ricaldoni.—p. 1126.
Tuberculoma in Brain of Adult. Pilod and Fribourg-Blanc.—p. 1128.
Iodized Oil in Pericarditis. N. Fiessinger and A. Lemaire.—p. 1135.
Case of Possibly Syphilitic Meningitis. Pissavy and Delafontaine.—p. 1137.
*Insulin in Treatment of Marasmus. Nobécourt and Lévy.—p. 1139.
Mechanism of Erythrocyte Sedimentation. S. Balachowsky.—p. 1141.

Biotropic Infectious Nature of Nine-Day Drug Eruptions.—Referring to the recently recorded case of a measles-like eruption that occurred on the ninth day after treatment with luminal sodium, Milian asserts that the erythema is of infectious nature. He compares it with the infectious erythema from arsenicals, appearing on the ninth day, while the toxic eruption does not become manifest till later. The phenomenon may be due to the stimulation of latent bacilli, as well as to the impaired defense of the organism from sympathetic disturbances of the endocrine glands. Arsphenamin has proved to be an elective poison for the sympathetic-endocrine system; phenobarbital seems to belong to the same category. Serum sickness may also belong in this group.

Sunlight Treatment in Different Diseases of Young Children.—Delille and Linossier report three cases of malnutrition in which heliotherapy induced spectacular improvements. Sun baths, given an infant with atrophy, aged 11 months, were followed by general amelioration, gain of weight and subsequent normal development. The treatment brought about the healing of a tuberculous metatarsophalangeal joint in a child over 2 years old. Sun baths induced great improvement of the general condition in an infant treated previously by pneumothorax. These three infants were kept all day long, quite naked, in the hospital yard.

Failure of Immunization of Infants Against Diphtheria.—Ribadeau-Dumas and his co-workers conclude from tests with anatoxin vaccination, that infants, under 4 months, are refractory to vaccination against diphtheria, since the injections do not enhance the antitoxic property of the blood. Anatoxin vaccination of pregnant women did not influence the antitoxin content in the blood of the new-born, and therefore no prophylaxis of the new-born can be attained by vaccination of the mother against diphtheria. The same may be true for other infections.

Insulin in Treatment of Malnutrition.—Nobécourt and Lévy observed an infant, aged 3 months, with a grave form of marasmus. After the usual treatment had failed, insulin was tried. Two daily injections of 0.5 c.c. of insulin (4 units) with 10 c.c. of 30 per cent. glucose solution were given subcutaneously for five days. Then one injection every second or third day, for two months. Then the first five days' treatment was repeated while the infant was fed with two thirds of milk mixed with one third of buttermilk and 15 per cent. of sugar. The infant gained 400 gm. in two weeks.

Journal de Radiologie et d'Electrologie, Paris

9: 257-304 (June) 1925

Roentgenography of Encysted Pleuritis in Children. P. Duhem and P. Séguin.—p. 257.
Multiple Exostoses in a Child. Laquerrière and Loubier.—p. 267.
Present Status of the Skin Dose. A. Béclère.—p. 275.
Electrotherapy in Toxic Goiter. Bonc.—p. 284.

Paris Médical

57: 53-80 (July 18) 1925

Child Surgery and Orthopedics in 1925. Mouchet and Roederer.—p. 53.
*Infectious Arthritis in Infants. Frœlich.—p. 64.
"Modern Orthopedics." H. L. Rocher.—p. 68.
Deformity of Jaw from Plaster Jacket. E. Cadenat.—p. 73.
*Treatment of Rachitic Deformity. C. Roederer.—p. 77.

57: 81-96 (July 25) 1925

"Closed" Pulmonary Tuberculosis. E. Sergent and R. Turpin.—p. 81.
Chlorination of Drinking Water. E. Techoueyres.—p. 84.

57: 97-128 (Aug. 1) 1925

Urology in 1925. R. Dossot.—p. 97.
Early Diagnosis of Cancer of the Kidney. F. Legueu and B. Fey.—p. 108.
Painful Circumscribed Hydronephrosis. F. Marsan.—p. 113.
Grave Latent Lesions of the Kidney. Pillet.—p. 118.
Latent Calculi in the Kidney. C. Lepoutre.—p. 121.
Emergency Prostatectomy. O. Pasteau.—p. 124.

Pneumococcus Arthritis in Infants.—Frœlich describes, out of seventeen cases observed in five years, five cases of healed acute infection of the hip joint, and two of a still active process—all consecutive to pulmonary pneumococcus infection. One of the still active cases presented a spontaneous total elimination of the head of both femurs. In the other case there was a pneumococcus infection of one hip joint and a tuberculous process in its mate. Unilateral or bilateral dislocation, consecutive to resorption of the head of the femur, was the consequence in the five older cases. The dislocation is often mistaken for a congenital deformity. While with congenital luxation only abduction of the limb is restricted, in the acquired form extension is impossible also. The discovery in the hip region of scars from fistulas may help in clinical examination. The diagnosis should be based chiefly on roentgenograms, since the picture is pathognomonic in the affection. The treatment of acquired dislocation is the same as of the congenital, but the results are much less satisfactory in these cases.

Treatment of Deformities from Rickets.—Roederer believes that sunlight or diet cannot cure the bone deformities from rickets even in young children. If bending or distortion of the leg bones occurs in infants, from 12 to 18 months old, the treatment may consist only in keeping the children absolutely off their feet. The only way to insure this is with a plaster splint. This combined with massage, sunlight and baths, may notably improve, in one or two months, bow-legs or knock-knees, even in children up to 2½ years. In grave cases osteotomy, preceded or not by three or four weeks' application of a cast, is indicated.

Presse Médicale, Paris

33: 1041-1056 (Aug. 5) 1925

Spirochetes in Cerebrospinal Fluid of Syphilitics. Jeanselme et al.—p. 1041.
Spontaneous Fracture in Tuberculous Osteitis. C. Lenormant.—p. 1042.
*Catheterization of the Ureter in Nephritic Colic. G. Marion.—p. 1043.
Gye and Barnard's Theory of Cancer. G. Roussy.—p. 1044.

Catheterization of the Ureter May Arrest Kidney Colic.—Marion reports three peculiarly demonstrative cases to illustrate the relief that may be afforded by catheterization of the ureter in prolonged attacks of nephritic colic, with fever and retention of calculi. Introduction of the catheter into the ureter, if possible, passing over the stone, immediately relieves the pain, and may induce the escape of the calculus in the next few days. He emphasizes that while morphin combats the pain, it contracts the ureter, and therefore the stones cannot descend. Belladonna, given in a daily dose of 0.08 gm. in pills, not only relieves the pain, but suppresses the ureter spasm, without impairing the peristaltic movements. Cases were observed in which, under belladonna, stones were expelled within a few days, while morphin was without effect.

33: 1057-1072 (Aug. 8) 1925

*Local Serotherapy in Meningitis. K. Lewkowicz.—p. 1057.
Silent Complications of Otitis. H. Aboulker.—p. 1059.
Present Status of Anesthesia. E. Faure.—p. 1067.

Intraventricular Injection of Antiserum in Meningitis.—Lewkowicz emphasizes that in meningococcus infection of the meninges the ventricles of the brain are always involved. The fact should be considered in specific serum treatment of the disease since the communication between the spinal space and the ventricles may be blocked, and thus the serum injected by lumbar puncture may not reach the ventricles. The results in eleven infants and twenty-three adults, treated

by lumbar or intraventricular injections, showed that in subjects above 2 years, the intraventricular injections should be preferred.

Schweizerische medizinische Wochenschrift, Basel

55: 705-724 (July 30) 1925

Typhoid Fever in Basel. E. Jessen.—p. 705.
*Serum Proteins in Pulmonary Tuberculosis. Alder and Zaruski.—p. 709.
*Psychiatric Symptoms in Postencephalitic Conditions. M. Schmidt.—p. 712.
Vaccination Against Chickenpox. W. Hoffmann.—p. 716.

The Proteins in the Serum and Exudates in Pulmonary Tuberculosis. — In tuberculosis the serum proteins are increased and the percentage of globulin is higher, especially in cases with an unfavorable prognosis. Alder and Zaruski discuss the various methods for estimation of the different protein fractions.

Postencephalitic Conditions.—Schmidt states that in the postencephalitic parkinsonian syndrome it is found that a certain parallelism exists between the retardation of the motor and the mental processes. The latter can be determined by association tests.

55: 725-748 (Aug. 6) 1925

Radiotherapy in Gynecology. W. Fürst.—p. 725.
Roentgen-Ray Diagnosis in Gallbladder Disease. L. Bischof.—p. 731.
*The Basal Metabolism. J. Stephani.—p. 732.

Basal Metabolism.—Stephani draws the following conclusions from her technical, experimental, and clinical studies: The average consumption of oxygen is 6.16 c.c. per minute and kilo of body weight in the normal male (at 760 mm. mercury), and 4.98 c.c. in the female (at 760 mm. mercury). During menstruation the latter figure is decreased about 14 per cent. In mild cases of exophthalmic goiter the increase of the metabolic rate may be within the normal limits (+ 15 per cent.). An average of 2 per cent. of the amount of oxygen that passes through the lung is absorbed in normal persons; this percentage is higher in slender persons and in toxic goiter, and is lower in the obese.

Clinica Medica Italiana, Milan

55: 99-188 (Oct.) 1924

*Cholesteremia in Lead Poisoning. A. Ceresoli.—p. 99.
Medical Versus Surgical Treatment of Peptic Ulcer. G. Albergo.—p. 106.
*Epidemic Encephalitis. N. Samaja.—p. 128.
*Epidemic Encephalitis. F. D'Alessandro.—p. 147.
Syphilis in Relation to Tuberculosis. G. Poggio.—p. 162.
Conservation of Antirabies Virus. Ivo Novi.—p. 180.

Cholesterol in the Blood in Lead Poisoning.—Ceresoli concludes from his experiments on dogs and clinical research that the cholesterol varies with the functional capacity of the liver, the organism behaving in this respect in lead poisoning the same as in infectious diseases.

Epidemic Encephalitis.—Samaja has had a man under observation for two years who presented first typical epidemic encephalitis and then a parkinsonian syndrome to which now has been added mal perforant. He incriminates the encephalitis as responsible for the mal perforant, and urges search for encephalitis in the antecedents in such cases before assuming tabes.

Epidemic Encephalitis.—The necropsy findings in a case fatal in about six weeks showed hemorrhagic foci. The young man had been attacked and beaten on the head two months before.

Riforma Medica, Naples

41: 553-576 (June 15) 1925

*Cinematization. A. Pellegrini.—p. 553.
*Malta Fever Simulating Tuberculosis. V. Vanni.—p. 555.
*Syphilis in Rheumatic Arthritis Deformans. A. Oro.—p. 557.
Psycholepsy. G. Tescione.—p. 562.
Recent Works on Surgical Treatment of Epilepsy. E. Aievoli.—p. 564.

Cinematization.—Pellegrini insists on the necessity for revision of the prevailing methods of amputation in order to adapt the stump for eventual volitional control of the artificial limb by the muscles.

Form of Malta Fever Simulating Pulmonary Tuberculosis.—Vanni cites Pisani's recent report on fifteen cases of pulmonary localization of Malta fever in a total of seventy-five cases in an epidemic. The spleen and the liver were usually enlarged, and the Bruce micrococcus was found almost in pure culture in the sputum, but several of the cases had been recorded as tuberculosis.

Arthritis Deformans of Syphilitic Origin.—In one of the two cases described, the joint affection began at the age of 31 in a man with stigmata of congenital syphilis. The joint pains were worse at night and there was much headache at times. Years of treatment for the supposed rheumatism gave no relief, but under mercury and bismuth the pains subsided and function improved, after a brief stage of severe focal exacerbation. Oro urges tentative treatment for syphilis in every case of chronic polyarticular rheumatism, and warns not to be deterred from continuing it by the focal reaction.

41: 625-648 (July 6) 1925

Vitamin B and Fixation of Calcium. U. Baccarani.—p. 625.
Technic for Detection of Apparently Sound Male Gonococcus Carriers. Cultivation of the Sperm. G. Graziadei.—p. 627.
*Dulness in Right Front of the Chest. O. Cantelli.—p. 630.
Gye and Barnard's Research on Cancer. A. Ferrannini.—p. 633.

Dulness Over the Liver.—Cantelli refers to what he calls the cupola area of dulness in the right front of the chest. When the dulness disappears on reclining horizontally, the liver is probably responsible for it, while its persistence and spread suggest glandular disease at the hilum.

41: 649-672 (July 13) 1925

*Salivary Index of Renal Function. G. Pacetto.—p. 649.
*Malaria and Gallstones. O. Cignozzi.—p. 652.
Clinical Value of the Wassermann Reaction. E. Mariotti.—p. 655.
Gye and Barnard's Research on Cancer. I. Jacono.—p. 659.

Urea in the Saliva.—Pacetto's research has confirmed the reliability of the urea concentration in the saliva as an index of renal function. Concordance between the percentage of urea in the blood and in the saliva was complete in 89 per cent. of fifty-five subjects. In the others, the salivary index indicated retention while the blood showed only normal figures. He compared other methods with the Hench and Aldrich technic, obtaining concordant results in 84 per cent. He adds that as all the probable sources of error tend to raise the salivary index, a normal figure excludes retention almost with precision.

Malaria and Gallstones.—Cignozzi practices in a malaria zone, and has been impressed with the exceptional prevalence of gallstones in the populace, and especially in all with a history of malaria. This disease attacks the liver and spleen almost constantly, and a history of malaria should turn the scale in favor of cholecystectomy in patients with recurring gallstone colic.

Annaes Brasil. de Derm. e Syph., Rio de Janeiro

1: 1-91 (Jan.) 1925

*Dermal Leishmaniasis. E. Rabello.—p. 3.
*Transmission of Bouba to Animals. A. Fraga.—p. 32.
Pemphigus Following Epidermic Cysts. J. Motta.—p. 37.
Xeroderma Pigmentosum; Two Cases. A. Fraga.—p. 44.
Acanthosis Nigricans in a Girl and in a Woman. de Moura Costa.—p. 47.
Multiple Hemorrhagic Sarcomatosis in Adult Male. A. Fraga.—p. 51.
Present Status of Bismuth in Treatment of Syphilis. J. Motta.—p. 55.

Dermal Leishmaniasis.—Rabello gives illustrations showing the mutilating effect of leishmaniasis affecting the skin and mucous membranes at the present day and as depicted in prehistoric pottery in Peru. He protests against its being called American leishmaniasis, as he declares that it is the same affection known elsewhere as Oriental sore. Any difference in aspect and course is due to the secondary infections. Fully 90 per cent. of the cases in Brazil are mild, and spontaneous cures are common. The 10 per cent. of grave cases does not justify geographical limitations.

Transmission of Brazilian Bouba to Animals.—The dogs and some of the rabbits did not develop the disease and only one of the two monkeys—all inoculated with the pertenuis spirochete derived from five human cases of bouba. Fraga's research thus confirms the possibility of transmitting bouba to animals. The causal micro-organisms proliferated rapidly in the local region with no tendency toward generalization to date.

Anales de la Facultad de Medicina, Montevideo

10: 193-306 (March) 1925

*The Pseudo-Edema of Dementia Praecox. B. Etchepare.—p. 193.
*Hydatid Cysts in the Liver. D. Prat and C. Piqueréz.—p. 204.
Hydatid Cysts Observed in Uruguay. A. Roldan.—p. 291.

Pseudo-Edema in Dementia Praecox.—Among the vasomotor and trophic disturbances of dementia praecox, Dide described what he called catatonic pseudo-edema. Etchepare gives an illustrated description of a case in a woman, aged 26. The edema involved the entire left leg. Under treatment with luminal the patient became tranquil, and the edema disappeared almost completely. As the psychic symptoms returned, two months later, the edema returned also in a lesser degree, the leg below the knee presenting a cyanotic effect.

Hydatid Cysts in the Liver.—Prat and Piqueréz tabulate the details of sixteen cases in which the cyst perforated into the biliary passages. The literature on the subject shows that the cyst opened into the common bile duct in 23.8 per cent., into the gallbladder and cystic duct in 33.3, and into the hepatic in 42.9 per cent. In every case of liver colic with symptoms suggesting obstruction of the common bile duct, accompanied by urticaria, the perforation of a hydatid cyst into the biliary passages should be suspected. Only in one of the 136 cases on record was the diagnosis made before the operation. The mortality in the operative cases ranged from 33 to 45 per cent. Of the sixteen personal cases described, only nine recovered. They recommend to operate on the cyst under local anesthesia.

Brazil-Medico, Rio de Janeiro

1: 301-312 (June 13) 1925

*A Case of Goundou. Souza Mendes.—p. 301.
Three Cases of Epibulbar Cancer of the Eye. E. Campos.—p. 304.

1: 313-324 (June 20) 1925

The Physiology of the Cardiovascular Apparatus. Pimenta Bueno.—p. 313.
A Diffuse Phlegmon in a Diabetic. A. Boavista Moscoso and A. Pinheiro de Ulhôa Cintra.—p. 316.
Pterygium. E. Campos.—p. 318.

A Case of Goundou in Brazil.—Souza Mendes remarks that not more than three cases of this osteoplastic periosteitis of the nose have been published in Brazil. He reports a case in a Portuguese, aged 53, who had resided in Brazil since 1892. The man refused to allow removal of the exostoses.

Gaceta Médica de Caracas

31: 369-384 (Dec. 31) 1924

The Fourth National Medical Congress of Venezuela.—p. 369.
*Uncontrollable Vomiting of Pregnancy. E. Ruiz Viso.—p. 372.
Treatment of Congenital Syphilis in Young Infants. Villegas Ruiz.—p. 372.
The Histopathology of Yellow Fever. W. H. Hoffmann.—p. 377.

Uncontrollable Vomiting of Pregnancy.—Ruiz Viso reports a case rebellious to all other measures in which the tendency to vomit was arrested at once by one subcutaneous injection of 2 c.c. of the blood serum from a healthy pregnant woman. The injection induced a chill and slight headache, but by the following day the woman was able to retain 1.5 liters of milk and has had no return of the vomiting. Four injections of the serum were made in all, on alternate days. The vomiting had begun twenty days after her last menstruation and had continued into the third month.

Revista de la Asoc. Médica Mexicana, Mexico City

3: 776-825 (April) 1925

*Plasmomas. T. G. Perrin.—p. 778.
*Transvesical Prostatectomy. A. Madrid.—p. 784.
*Spread of Trachoma in Mexico. D. M. Vélez.—p. 787.
Sterilization of Surgeon's Hands. Salvador Martinez Parente.—p. 790.

Plasmoma in Bone.—Perrin reproduces the histologic findings in the tumor which had been diagnosed as an osteosarcoma and the leg had been amputated. The microscopic findings apparently confirmed this assumption of round cell sarcoma, but a microscope with stronger lenses revealed that the tumor was a fibroplasmocytoma. The cells were seen to be Unna plasmocytes (Cajal's cyanophil cells). Under radiotherapy the growth of the neoplasm had been arrested, and there has been no tendency to recurrence or metastasis in the nearly four months since the amputation.

Transvesical Prostatectomy.—Madrid declares that the success of the intervention depends on the preparation for the operation, general hygiene and systematic reduction of the amount of residual urine by catheterization. His experience in forty-six cases seems to indicate that the age of 62 is the upper limit for success. He warns particularly against catheterizing in cases of chronic infected retention; the bladder should be opened and the family should be warned of the danger of accidents as the density of the urine drops and symptoms of uremia appear as the residual urine is suppressed, the kidneys becoming overcongested.

Trachoma in Mexico.—Vélez remarks that trachoma has spread alarmingly through the states of Sonora, Sinaloa, Nayarit and Colima, imported by Chinese immigrants to the Pacific Coast. He urges the necessity for checking or restricting the immigration of Chinese, careful inspection of all the schools in the affected regions, with house to house search for all cases of trachoma, and isolation, especially of the children.

Revista de Medicina y Cirugía, Havana

30: 323-348 (June 10) 1925

*Chronic Stenosis of the Duodenum. Elpidio Stincer.—p. 329.
*Borax Treatment of Chorea. Manuel Galigarcia.—p. 336.

Chronic Stenosis of the Duodenum.—Stincer describes three cases of chronic obstruction by the root of the mesentery. The clinical picture includes vomiting, pain and tension in the epigastrium, with constipation or diarrhea. The alternations of severe symptoms and absolute relief are characteristic; also the attenuation of the symptoms in the knee-chest position, and the immediate disappearance of all disturbances after duodenojejunostomy. The pain has no relation to the meals, and is not modified by alkalies. In Stincer's three cases the disturbances were of several months' to five years' standing.

Chorea Improved by Boric Acid Salts.—Galigarcia reports the cure of a boy of 12 with severe chorea minor which had developed in school and had resisted all treatment for months. The boy was isolated, given a tepid bath three times a day, and 2 gm. of sodium borate daily. By the end of the week there was marked improvement, and a complete cure by the twenty-second day.

Semana Médica, Buenos Aires

1: 1369-1424 (June 25) 1925

Disturbances in the External Movements of the Eyes. Adrogué.—p. 1369.
*Cystic Epithelioma of the Breast. M. L. Pérez and A. Jakob.—p. 1398.
*Sarcoma of the Mesentery. P. de Elizalde and J. Medeiros.—p. 1405.

Cystic Epithelioma of the Breast.—Pérez and Jakob state that the giant cystic growth had developed after a trauma over a year before. The tumor grew very rapidly; the cavity of the cyst contained 4 kg. of fluid. Jacoulet in 1911 had been able to find only thirty-seven cases of cystic epithelioma of the breast on record. The tumor seems to be between the benign and malignant growths, but they advise treatment on the basis of cancer.

Sarcoma of the Mesentery in an Infant.—One of the features of the case was the lack of influence on the general health, the tumor being discovered during a casual examination for a slight infectious process. The 12 months' infant died at the exploratory operation which revealed the sarcoma of the mesentery.

Siglo Médico, Madrid

75: 549-576 (May 30) 1925

*Hyperpyrexias. A. Morales.—p. 549.
Study of Inspiration and the Subconscious. P. Luengo Marcos.—p. 550.
The Insane Who Seem Sane. F. Huertas del Campillo.—p. 552.
*Leprosy in Spain. Mauro Guillén.—p. 553.
Treatment of Industrial Accidents. Slocker.—p. 554.

Hyperpyrexia.—Morales refers to some cases in his own experience in which the temperature reached 40 and 42 C. As long as the consciousness is intact he explains these fevers as exaggerated reflex action, of possibly hysteric nature. He

has found that in cases of traumatic shock, unless the temperature rises after the application of boiling ether (at 41 C.) there is no hope of reviving the patient, the functions of the heat-producing centers being evidently totally abolished. This hot ether artificial pyrexia is thus a valuable aid in the indications for operations in dubious cases.

Leprosy in Spain.—Guillén states that besides the foci of leprosy in the Canary Islands there are three principal foci in Galicia, Andalucia and Levante, the latter including part of Valencia up to Barcelona. This district has a leper colony, and others are planned for Galicia and Andalucia. Segregation of lepers is not compulsory in Spain.

76: 53-76 (July 18) 1925

*Glandular Reactions in Malta Fever. F. Rodríguez de Partearroyo.—p. 53.
Visceral Manifestations of Cardiac Insufficiency. Gonzalo.—p. 56.
Consolidation of a Comminuted Fracture. Slocker.—p. 57.

Glandular Reactions in Malta Fever. — Rodríguez has encountered an early and a tardy type of glandular involvement in Malta fever, both are generally extremely painful, spontaneously and on pressure. One of his co-workers at the laboratory got a drop of an emulsion of the micrococcus on a small wound on his lip. He cleansed the region but did not use any vaccine. Twelve days afterward fever developed, with intense sore throat, and a crisis the seventh day with apparent recovery. Six days later the glands in the neck became very painful and the fever flared up again. In another case of supposed malaria, rebellious to all treatment, there was recurring febrile adenitis. The undulant course gave the clue finally, confirmed by agglutination tests, and the long clinical course was abruptly arrested by vaccine therapy against Malta fever.

Archiv für Gynäkologie, Berlin

124: 689-850 (July 25) 1925

Birth Traumas. A. Stern.—p. 689.
Prolapse of Diverticulum of the Ureter. E. Pribram.—p. 726.
Fatal Hemorrhage from a Varicose Vein of the Cervix. Wieloch.—p. 733.
The Lipoid Content of the Corpus Luteum. Hermstein.—p. 739.
Cancer, Ovary and Placenta. O. O. Fellner.—p. 771.
Uterine Endotheliomas. K. Ulesco-Stroganowa.—p. 802.
Social Factors in the Pathogenesis of Ptosis of the Genital Organs. N. A. Spiegel.—p. 823.
Cancer and Pregnancy. H. Edelberg and J. S. Galant.—p. 833.

Archiv für klinische Chirurgie, Berlin

130: 427-626 (July 25) 1925

*Periarterial Sympathectomy. E. Melzner.—p. 427.
Phlegmon of the Intestines. Bundschuh and Wolff.—p. 438.
Ulcers of the Small Intestine. M. Grasmann.—p. 449.
Operative Technic for Rectal Cancers. F. Mandl.—p. 479.
*Paravertebral Anesthesia in Angina Pectoris. F. Mandl.—p. 495.
Separation of the Radius Epiphysis. R. Maier.—p. 519.
Traumatic Epilepsy. W. N. Rosanoff.—p. 527.
The Fate of Bone Transplants. A. Wereschinski.—p. 545.
*Experimental Studies on Gastro-Enterostomy. G. Kopyloff.—p. 568.
The Prevention of Peritoneal Adhesions. P. Rostock.—p. 589.

Experimental Studies in Periarterial Sympathectomy.—Melzner performed this operation successfully on one renal artery in five dogs in order to study the histologic changes which may follow the alleged dilatation of the artery. The kidneys were examined and compared with the control kidney, three, fourteen, thirty-five, fifty-six and seventy days after the operation. In no case could he detect any histologic difference between the operated and the nonoperated kidney. The author believes that these experiments show that periarterial sympathectomy cannot lead to a vasodilatation.

Paravertebral Injection of an Anesthetic in Treatment of Angina Pectoris.—This method of treatment always arrests the acute attack, and has frequently a prolonged beneficial effect. If a recurrence takes place after a period of improvement, the cutting of the rami communicantes, according to Gaza's suggestion, may be considered. Mandl emphasizes the importance of a proper technic and of the choice of the proper segments.

Gastro-Enterostomy.—Kopyloff draws the following conclusions from his experimental work on dogs: A separate suture of the mucosa insures a permanent large opening; if no separate suture for the mucosa is made, the opening tends to shrink. If the mucous membranes are cut with the cautery, the inflammatory reaction is more pronounced than after the use of knife and scissors. An artificial narrowing of the pylorus or the performance of Braun's entero-anastomosis does not influence the shape of the anastomosis. Silk causes local inflammations, and may result in defects. Lembert's seroserosa suture gave the best results. Catgut may be found unabsorbed as long as four months after the operation; it is the ideal material for suturing the intestinal tract.

Deutsche medizinische Wochenschrift, Leipzig

51: 1265-1304 (July 31) 1925

Endocrine Disturbances in Gynecology. Benthin.—p. 1265.
*Salt and Water Obesity. H. Zondek.—p. 1267.
*Hyperplasia of the Parathyroids in Skeletal Disease. F. Kerl.—p. 1271.
A Case of Atypical Leukocytosis. W. Schober and H. Opitz.—p. 1273.
Preservation of Sheep Cells for Complement Fixation. C. Sonnenschein.—p. 1276.
The Innervation of the Gastrocnemius Muscle. de Boer.—p. 1278.
Diazo Test and Pulmonary Tuberculosis. M. Weiss.—p. 1278.
A Case of Recurrent Herpes Zoster. W. Richter.—p. 1279.
Treatment of Lupus Vulgaris with Ignipuncture. Kromayer.—p. 1281.
Castration in Hysteria. A. Kutzinski.—p. 1282.
Pyloroscopy with a Cystoscope. W. Sternberg.—p. 1283.
Endoscopes. H. Haebler.—p. 1283.
Stand That Screws to the Bed for the Infusion Apparatus. Müller.—p. 1284.
Infectious Diseases. O. Moog.—p. 1285. Conc'n.
Physical Training from the Medical Standpoint. W. Weisbach.—p. 1288.
Medical Science of Physical Training. Reinheimer.—p. 1289.
Nostrums. Zernik.—p. 1289.

Salt and Water Obesity.—Zondek describes this pathologic condition in the following way: The fat deposits develop in a relatively short period of time; the temperature of the patient is labile and tends to subfebrile values; oliguria is frequently present, sometimes combined with pathologically increased thirst; the basal metabolism is normal or increased; functional tests demonstrate a tendency to salt and water retention; headaches are frequent and, sometimes, symptoms of intracranial pressure are found. He believes that this type of obesity may be caused either by pituitary disturbances (if roentgenologic evidence is found), or by cerebral processes, or by disturbances in the peripheral tissues, the physical-chemical condition of which prevents the proper action of hormones. A restricted diet does not yield any results in these patients, but restriction of water and of salt and stimulation of diuresis are effective. The administration of thymus or thyroid substance has a strongly reducing effect.

Hyperplasia of the Parathyroids.—Kerl reports one case of extreme osteomalacia and one case of osteoporosis, in each of which the parathyroids were markedly hyperplastic, and contained foci of granulations (*Wucherungsherde*), as described by Erdheim. The author believes that the histologic changes in the parathyroids are secondary to the skeletal diseases. No pathologic changes were found in any other endocrine glands.

Klinische Wochenschrift, Berlin

4: 1481-1528 (July 30) 1925

Immunity and Nourishment in Childhood. L. F. Meyer.—p. 1481.
The Development of Leukocytes and Endothelial Cells in Inflammation and in Cultures. A. Maximow.—p. 1486.
Endocrine Antagonism. H. Zondek and H. Bernhardt.—p. 1488.
Arsphenamin-Bismuth and Arsphenamin-Mercury. Smechula.—p. 1493.
*The Specific Dynamic Action of Proteins. R. Dürr.—p. 1496.
*Treatment of Tetanus with Glucose. Jadassohn and Streit.—p. 1498.
Vasomotor Disturbances in Epidemic Encephalitis. Büchler.—p. 1500.
Melanin-Like Substances. B. Brahn.—p. 1502.
The Estimation of Lactic Acid in the Blood. Sluiter.—p. 1502.
Microtest for Lactic Acid in the Blood. Mendel and Goldscheider.—p. 1502. Correction, p. 1576.
Standardization of Pituitary Extracts. Kochmann and Wagner.—p. 1503.
Chronic Joint Disease. H. Assmann.—p. 1504.
The *P*H-Balance in Epilepsy. H. Vollmer.—p. 1508.
To Facilitate Palpation of the Abdomen. E. v. Rutich.—p. 1526.
Statistics of Morbidity in Germany. Freudenberg.—p. 1526.

The Specific Dynamic Action of Proteins.—Dürr emphasizes the importance of prolonging tests for the specific dynamic action of proteins to at least six hours, because some patients have a delayed, but quantitatively normal, reaction, which would be considered subnormal if the test were not conducted long enough. According to his studies, Plaut's

theory, that a subnormal value is characteristic for pituitary disturbances, is not correct.

Tetanus Treatment with Glucose.—Jadassohn and Streit observed in two patients that glucose injections had a very favorable influence on the symptoms of tetanus. They examined tetanic rabbits and found no hypoglycemia but a very considerable reduction of the glycogen in the central nervous system. Glucose injections did not prolong the life of rabbits inoculated with tetanus, but the authors believe that the reduction in glycogen in the nervous system may explain their clinical observations, and that glucose injections should be tried more in tetanus.

81: 1529-1576 (Aug. 6) 1925

*Sympathetic Ophthalmia. A. Peters.—p. 1529.
*Roentgen-Ray Studies on the Bronchi. R. Lenk and F. Haslinger.—p. 1533.
Electrocardiogram. E. Mosler and H. Sachs.—p. 1535.
Histologic Studies on the Central Nervous System. W. Weimann.—p. 1537.
*Blood Sugar and Cancer. A. Foerster and A. Forster.—p. 1540.
The Motility of the Fallopian Tubes. F. Kok.—p. 1543.
A Characteristic Symptom of Acromegaly. F. Herzog.—p. 1545.
Unusual Findings in Colon Bacillus Septicemia. H. Simon.—p. 1546.
A Simplified Respiratory Apparatus. H. Schadow.—p. 1548.
The Sympathetic Nerve in Tetanic Spasms. R. Golant-Ratner.—p. 1549.
The Physiology of the Pituitary. K. Fromherz.—p. 1551.
Blood Sugar After Ligature of Pancreatic Duct. Alpern and Leites.—p. 1551.
Insulin in Spasmophilia in Infants. A. Adam.—p. 1551.
The Nature of the Eosinophilic Granula. A. Neumann.—p. 1552.
A Case of Narcolepsy. P. Hilpert.—p. 1553.
Chronic Arthritis. II. H. Assmann.—p. 1554. Conc'n.
The Culture of Science. F. Haber.—p. 1559.
Thomas Mann's Novel, "Zauberberg." H. Ulrici.—p. 1575.

Sympathetic Ophthalmia.—Peters believes that any explanation of this phenomenon, that is based merely on exogenous infection, is unsatisfactory. He thinks that Meller's theory, which emphasizes the importance of an endogenous infection, promises more for the solution of the problem. The fact that the whole clinical appearance of the condition resembles very much ocular tuberculosis, suggests the possibility that the causative micro-organism (if there is a living virus at all) must be very similar to the tubercle bacillus in its biologic qualities.

Radiology of the Bronchi.—Lenk and Haslinger examined the roentgen-ray pictures of patients after intratracheal administration of contrasting iodin-containing oil. They found that, if the oil reaches the alveoli, pictures may result which simulate bronchiectasis. A differentiation is possible only by fluoroscopic methods. Oil which reaches the alveoli is not expectorated, but is very slowly resorbed. The oil has a tendency to accumulate at the margins of the lung.

The Blood Sugar in Cancer.—Foerster and Forster examined the blood sugar variations in cancer patients after the ingestion of glucose. Friedenwald and Grove have claimed that the blood sugar values in cancer patients show a characteristic deviation from normal individuals. The authors substantiated the finding of the American workers, but they emphasize that the "cancer-curve" may be found also in other conditions, such as in cachexia, in benign stenosis of the pylorus, in cholelithiasis and in the elderly.

Medizinische Klinik, Berlin

21: 1107-1144 (July 24) 1925

Death from Heart Failure in Pregnant Women. G. A. Wagner.—p. 1107.
Beriberi and Experimental Avitaminosis. S. Gräff.—p. 1112. Cont'd.
Treatment of Congenital Syphilis with Bismuth. E. Langer.—p. 1115.
Insulin and Water Balance. O. Klein.—p. 1116.
*Perforated Peptic Ulcers. R. Stohr.—p. 1120.
Pleurisy with Effusion in Children. J. v. Lukács.—p. 1122.
Protoplasma Activation in Atrophy of the Optic Nerve. Heim.—p. 1123.
Organotherapy in Diabetes Insipidus. V. Kairiukštis.—p. 1124.
Identical Twins. E. Loewy.—p. 1125.
Singultus Following Influenza. Grothusen.—p. 1126.
Metabolic Studies. B. Sjöstrand.—p. 1126.
Medical Psychology. H. Fendel.—p. 1129. Conc'n.
Orthopedic Disease of the Knee Joint. S. Peltesohn.—p. 1131.

Perforated Peptic Ulcer.—It is of the utmost importance to diagnose the perforation of a peptic ulcer as early as possible. The method of choice in the treatment is the resection of the ulcer, including the pylorus and antrum, and joining the stumps, according to Billroth's first method. If this procedure is impracticable, the ulcer should be covered with omentum, and a posterior gastro-enterostomy should be made. Only if a diffuse, purulent peritonitis has already set in, drainage and possibly the establishment of a fistula in the small intestine should be performed. In all other cases, Stohr advises primary suture of the operative wound.

21: 1145-1180 (July 31) 1925

The Gastric Secretion. E. Leschke.—p. 1145.
The Tonicity of the Heart Muscle. E. Holzlöhner.—p. 1149.
*Beriberi and Experimental Avitaminosis. S. Gräff.—p. 1152. Conc'n.
The Prevention of Poisoning with Lye. J. Langer.—p. 1155.
Jarisch-Herxheimer Reaction. Fleischmann and Kreibich.—p. 1157.
Local Metabolic Disturbances in Varicose Veins. S. Frey.—p. 1158.
Serodiagnosis of Gonorrhea. Colin.—p. 1159.
Endocrine Insufficiency and Pigment Anomalies. H. Ullmann.—p. 1160.
Intermittent Pseudo-Neurasthenia. H. Klein.—p. 1161.
*Mátéfy's Reaction in Tuberculosis. Dietl and Maslowski.—p. 1163.
Luminal plus Atropin in Treatment of Epilepsy and Paralysis Agitans. Kutzinski.—p. 1165.
Version and Pubotomy. F. Eberhart.—p. 1166. Cont'n.
Survey on Gastro-Intestinal Hormones. F. Boenheim.—p. 1168.

Beriberi and Experimental Avitaminosis.—Gräff concludes that neither the epidemiologic observations nor the pathologic-anatomical findings decide conclusively for avitaminosis or an infectious agent as the etiologic factor for beriberi. Polyneuritis and other nervous symptoms are not directly dependent on the deficiency of vitamin B in the food of experimental animals. Gräff believes that an infectious agent may have the same effect in the pathogenesis of the disease as the lack of vitamin B in the food.

The Mátéfy Reaction in Tuberculosis in Childhood.—Dietl and Maslowski believe that this reaction aids considerably in the diagnosis of an active tuberculosis. The strength of the reaction parallels the severity of the disease.

Münchener medizinische Wochenschrift, Munich

72: 1279-1318 (July 31) 1925

*New Method in Treatment of Gonorrhea. E. Holzbach.—p. 1279.
*Treatment of Sepsis with a Human Vaccinated Serum. P. Linser.—p. 1281.
*Convalescents' Serum in Scarlet Fever. H. de Rudder.—p. 1281.
Bacteriology in Obstetrics and Gynecology. F. Schugt.—p. 1282.
Protoplasma Activation in Chronic Arthritis. E. Plate.—p. 1284.
*Fats in Brains of Fetus and New-Born. Berberich and Bär.—p. 1287.
Surgical Indications with Gallstones. F. Colmers.—p. 1290.
A T-Bandage for Uterine Atony. R. Demme.—p. 1291.
Extraction of Foreign Bodies from Stomach and from the Bladder. J. Clemens.—p. 1293.
Treatment of Tachycardia. K. Barth.—p. 1296.
Ill Effects from Ray Treatment. M. Samuel.—p. 1296.
Diathermy for Arsphenamin Infiltrations. A. E. Stein.—p. 1297.
The Jupiter Lamp. H. Multen.—p. 1297.
Bone Fracture. F. Lange.—p. 1298. Cont'n.
The Mortality Statistics in Esthonia. E. Roesle.—p. 1301.
Medicine in Ancient Egypt. R. Carriere.—p. 1303.

Treatment of Gonorrhea.—It has been frequently observed that the cure in gonorrhea is closely associated with the regeneration of the epithelium. Holzbach applied scarlet-red oil or derivatives of it, whose stimulating influence on the growth of epithelium is well known, to the local lesions in gonorrhea. The result was first a tremendous increase in number of the gonococci in the secretion, but they soon disappeared. He believes that this treatment never leads to an ascending infection, and is more successful than any other treatment.

Artificial Human Antiserum.—In seemingly hopeless cases of sepsis, which did not respond to any treatment, Linser made an autogenous vaccine and injected healthy persons with it at short intervals. Ten days after the first injection, 200 c.c. of blood was withdrawn and the serum injected intravenously into the patient. Septicemias due to streptococci, staphylococci, pneumococci and gonococci were treated in this way. In every case a complete success was obtained within a short time.

Scarlet Fever Convalescents' Serum.—De Rudder obtained excellent results with the intravenous injection of convalescents' serum in postscarlatinal febrile conditions or in the late manifestations of the disease.

Fats in Brains of Fetus and New-Born.—Berberich and Bär examined the brains of fifty-two animals, some during fetal life, some at once after birth, for fat and lipoids. They

found that fat-containing cells never occur in the central nervous system of normal animals. They appear regularly after even slight injuries to the brain substance. The authors conclude that fat droplet cells in the brain of new-born infants always indicate that the brain had met with some injury.

Wiener klinische Wochenschrift, Vienna

38: 877-902 (Aug. 6) 1925

The Dosage in the Administration of Sexual Hormones. O. Kauders. —p. 877. Cont'd.
Cancer Research. R. Bauer.—p. 881. Conc'n.
The Bronchial Breathing Sound. A. Winkler.—p. 883.
A Case of High Leukocytosis in Tuberculosis. O. Luze.—p. 886.
*D'Espine's Sign and Dilatation of the Aorta. E. Maliwa.—p. 891.
Cancer in Pregnancy. S. Peller.—p. 892.
Myxedema. E. Nobel. Supplement, pp. 1-14.

D'Espine's Sign in Dilatation of the Aorta.—D'Espine's sign is positive in all diseases which lead to an infiltration or to the formation of a tumor in the mediastinum. Maliwa has found that a positive D'Espine's sign is also present in dilatations of the aorta, even of moderate degree.

Zentralblatt für Chirurgie, Leipzig

52: 1697-1760 (Aug. 1) 1925

Cystostomy plus Vasectomy in Certain Cases of Prostatic Obstruction. E. Grunert.—p. 1698.
Local Anesthesia in Prostatectomy. A. W. Wischnewsky.—p. 1701.
Treatment of Peptic Ulcers. Goepel.—p. 1702. Reply. Schubert.—p. 1707.
Plastic Gastropexy. A. Abrashanow.—p. 1707.
*Diathermy in Rectal Stenosis. H. Picard.—p. 1709.
Renal Irritation After Novocain Anesthesia. R. Morian.—p. 1711.
Disinfection of Hands with Solution of Formaldehyd. Babsky.—p. 1713.

Diathermy for Rectal Stricture.—Picard advocates diathermy for rectal or anal stenosis of any etiology. He believes that the results are better than with any other treatment.

Zentralblatt für Gynäkologie, Leipzig

49: 1697-1792 (Aug. 1) 1925

Improved Abdominal Incision. H. Füth.—p. 1725.
Rectal Versus Vaginal Exploration. W. Fürst.—p. 1728.
*Ovarian Hormones. S. Loewe.—p. 1735.
Heterotopic Hypertrophies in Uterus. K. Heim.—p. 1759.
Central Rupture of the Placenta. E. Witt.—p. 1768.
Casting Off of the Vaginal Part of the Cervix. E. Bettmann.—p. 1771.
Sequelae of Curettements. G. T. Zomakion.—p. 1775.

Ovarian Hormones.—True ovarian hormones stimulate the growth of the genital organs; they have an estrum-inducing effect, and they cause enlargement of the mammary glands, the latter even in castrated male animals. The estrogenetic effect is measured accurately by cytologic changes in the vaginal secretion (Allen and Doisy). The hormone is effective, too, in oral administration, although twenty times less. Loewe found that none of the preparations on the market have any effect if given by the mouth.

Acta Chirurgica Scandinavica, Stockholm

59: 185-286 (June 30) 1925

*Knotting of the Intestine. A. R. Elfving.—p. 185.
*Surgical Diathermy. S. Johansson.—p. 208.
*Embolectomy. G. Söderlund.—p. 225.
*Tuberculous Stricture of the Urethra. S. Richter.—p. 237.
Cystic Dilatation of Obstructed Bile Duct. G. Söderlund.—p. 253.
Appendicitis. N. Paus.—p. 271.

Knotting of the Ileum and Sigmoid Flexure.—Elfving's analysis of eighteen cases from the records elsewhere and thirty-four in Finland shows that the sigmoid flexure suffers less from the kinks than the ileum, and that twelve hours is the extreme limit of strangulation that allows successful intervention. The sigmoid flexure generally has to be punctured before the knot can be reduced. The strangulated loop sometimes included as much as 3 meters of the bowel.

Electrocoagulation in Surgery.—Johansson describes his experimental and clinical experiences with surgical diathermy, including a number of cases of cancer of the mouth, penis and rectum, and one inoperable, broad-based sarcoma of the left side of the neck and as large as a man's head. Under two applications of electrocoagulation the growth was removed down to sound tissues, with complete healing in about six months. He advocates this method also for arresting hemorrhage in parenchymatous organs.

Embolectomy.—Söderlund adds two new cases to the sixty-two he has collected from the literature, with very good results in 33 per cent. of the cases.

Tuberculosis of the Urethra.—Richter warns against the use of the catheter in cases of urethral stricture when there is reason to suspect its tuberculous nature, accompanying tuberculosis of the urogenital tract. In two cases he reports in detail, catheterization of the tuberculous stenosis was followed directly by fatal miliary tuberculosis. This developed also in a case of tuberculous periurethritis. These experiences teach the necessity for exploratory exposure of the kidneys or ureters, leaving the urethra unmolested. There were thirteen other cases of stricture of the urethra among 100 men and fifty women with tuberculosis of the urinary apparatus at Upsala in twenty-three years. The primary focus could be removed in nine of this group of thirteen, and in all these the tuberculous urethral process healed after the nephrectomy.

Acta Pædiatrica, Upsala

4: 247-435 (July 1) 1925

*Vitamin Requirements of Malnourished Infants. T. Frölich.—p. 247.
*Asthma and Tuberculosis in Children. A. Wallgren.—p. 286.
*Action of Atropin in Infants. G. Lindberg.—p. 309.
Secretion of Hydrochloric Acid in Children. G. Muhl.—p. 356.
Spontaneous Pneumothorax in Infant Ten Days Old. Tidström.—p. 380.
*Aplastic Anemia—Leukemia. A. Øwre.—p. 401.
*Myeloid Leukemia in Infants. N. Malmberg.—p. 410.

Vitamin Requirements of Malnourished Infants.—Frölich gives 15 gm. of malt soup extract and 15 gm. of cod liver oil to each malnourished infant under 6 months old, regardless of the quantity of milk being given. This avoids the excess of water in the usual infant feeding. This is added to the mixture of 2 parts milk and 1 part water with 4 per cent. of sugar. The malt soup extract is dissolved in the water and is not heated over 65 C. The cod liver oil is distributed in the six or three bottles. The child thus gets in twenty-four hours 500 calories in 600 c.c. and 700 calories in 900 c.c. The details of eight cases are given to illustrate the special advantages of this concentrated feeding in rickets, tetany, tuberculosis, syphilis, and nutritional disturbance, acute or chronic. The greater his experience, the earlier he starts with this mixture. There was no vomiting with it, and the increase in weight was constant.

Tuberculosis and Asthma in Children.—Wallgren incriminates tuberculous bronchial glands as the causal factor in asthma in three children under the age of 4.

Action of Atropin in Infants.—Lindberg has been studying this subject on 100 infants in the last four years, and here describes seventeen typical experiences with it. The only reliable method of administration is in 0.5 per cent. alcoholic solution, never giving more than 0.1 mg. at first. One drop of the solution corresponds to 0.1 mg. of atropin. Most infants bear it well; one, 8 months old, was given up to 6 mg. of atropin sulphate daily without harmful reaction. The strong vasomotor reaction to the atropin is constant in the healthy, and seems to be a compensating phenomenon to counteract the temperature-raising action of the drug. Atropin often has a tranquilizing action in excessively nervous infants, and may arrest habitual vomiting and pylorospasm, but often fails in both. The eczema with the exudative diathesis is sometimes favorably influenced. It acts more promptly and in smaller doses when given before meals.

Aplastic Anemia.—The apparently moribund little girl with the blood picture of aplastic anemia recuperated apparently completely after two transfusions of blood, but fulminating leukemia soon developed, fatal in six weeks.

Myeloid Leukemia in Infants.—Malmberg gives the details of two cases of myeloid leukemia beginning at the age of 2 weeks and 8 months. The course was acutely fatal in the latter case, but under roentgen-ray treatment the disease ran a more chronic course in the other infant. It died at the age of 20 months. The spleen, liver, testes and lymph glands were very much enlarged in both infants.